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IN THE NAVY INDUSTRIAL COMMUNITY**



**NAVY PERSONNEL RESEARCH
AND
DEVELOPMENT CENTER
San Diego, California 92152**

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⑥ **AN EXAMINATION OF PRODUCTIVITY IMPEDIMENTS
IN THE NAVY INDUSTRIAL COMMUNITY.**

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FOREWORD

This project was conducted in response to a request from the Chief of Naval Material and his Productivity Advisor. Its objectives were to identify impediments to productivity in the Navy industrial community, determine the sources of these impediments, and, where possible, provide recommendations.

The work was conducted by a team of researchers at five types of Navy activities, with each team member having major responsibility for a distinct area. Kent Crawford concentrated his efforts at the Pearl Harbor Naval Shipyard; Gary Kissler, at the Concord Naval Weapons Station; Deborah Mohr and Michael White, at the Naval Supply Center, San Diego; Herman Williams, at the Naval Air Rework Facility, North Island; and Leanne Young, at the Public Works Center, San Diego. At all five activities, Arthur Newman investigated the acquisition and utilization of automated data processing equipment; and Thomas Koslowski, a representative from the Western Regional Office of Personnel Management, personnel-related issues. Laurie Broedling and Gary Kissler supervised the project. Because all members of the team contributed more or less equally to this report, they are listed on the title page in alphabetical order.

Appreciation is expressed to all the Navy military and civilian personnel in the field activities who cooperated in identifying productivity impediments and in explaining their impact to the authors of this report. Many other individuals, including representatives from the Naval Material Command, the Systems Commands directly responsible for the participating field activities, the Office of Personnel Management (OPM), the Chief of Naval Operations, the Office of the Secretary of Defense, and other agencies outside the Department of Defense, gave freely of their time and advice throughout the study. Special appreciation is extended to Mr. Francis Yanak, Head of the Western Regional OPM, whose support and assistance throughout this study contributed greatly to the success of this effort.

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SUMMARY

Problem

There is increasing concern over the decline in industrial productivity in the United States. The Navy shares this concern and is paying particular attention to productivity issues within its industrial community.

Objectives

The objectives of this effort were to identify impediments to productivity within the Navy's industrial community, to determine the source of these impediments, and, where possible, to provide recommendations for removing them. The study was conducted jointly with the Western Regional Office of Personnel Management (OPM).

Approach

Five Navy Material Command (NAVMAT) field activities were selected as representatives of the major types of organizations in the Navy's industrial community. These included a shipyard, a weapons station, a supply center, a public works center, and an air rework facility.

Impediments were identified using a combination of one-on-one interviews, group interviews, and questionnaires. Those that were classified as being under the control of local management were turned over to the respective activities for further assessment and action; those classified as being beyond local control were documented and pursued in greater depth through interviews at various levels above the field commands. In addition, researchers contacted management personnel at another command within each activity type (e.g., shipyard, supply center) to determine whether identified impediments were also seen as problems at different locations.

Results

Impediments to productivity that were common to more than one activity were identified in such diverse areas as supply support, automated data processing equipment, erratic workloads, inadequate capital investment, micromanagement, military rotation, pay/position management, staffing, technical/managerial training, and employment restrictions. Impediments were also identified that were unique to a particular type of organization (e.g., propeller waivers for shipyards). Specific recommendations were provided, where possible, for removing or further assessing the impact of identified impediments.

Conclusions and General Recommendations

In addition to the changes required to remove specific impediments, results of the study indicated that there is a need to improve upward and lateral communication and to reduce excessive controls. Also, it is not enough merely to identify impediments and make suggestions for changing them. Personnel within the Navy industrial community need to know that action is being taken and to see "visible change."

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INTRODUCTION

Problem

There is increasing concern over the decline in industrial productivity in the United States. To address this problem in the Navy, the Chief of Naval Material tasked the Navy Personnel Research and Development Center (NAVPERSRANDCEN) to conduct a study of impediments to productivity within the Navy industrial community. During the initial design stage of the project, it was learned that the Western Regional Office of Personnel Management (OPM) was planning to initiate a similar study within personnel departments of field activities. Therefore, because of the similarity of interests and the recognition that many impediments perceived by line managers would be personnel-related, it was decided to undertake a joint project.

Objectives

The objectives of this effort were to identify impediments to productivity within the Navy's industrial community, to determine the source of these impediments, and, where possible, to provide recommendations for removing them.

Background

A number of potential impediments to productivity have been identified in various studies conducted and conferences held in recent years. Sutermeister (1976), in his review of people and productivity, described a number of technical and personnel characteristics that could act to limit organizational productivity: (1) work flow and layout, (2) plant production capacity, (3) machine and equipment design, (4) the percentage of "indirect" workers (an organization that has planning, quality control, industrial engineering, etc., staffs should be able to devise methods that result in a greater output per man-hour), and (5) the degree of scientific management (the amount of emphasis given to such things as reduced waste and spoilage, time and motion studies, and standardization).

Duerr (1974) discussed what he terms "misdirected incentives," which include incentive structures within the organization that cause people to act in a manner directly opposite from the way the organization wants them to act. Such incentives usually result from three underlying factors:

1. The measurement system. Managers attend to items that they know are being measured, particularly if they have to report to higher management on those items. Because of the natural tendency to want to "look good," meeting the goals of the reporting system can be a goal in itself, even if meeting that goal acts to the general detriment of the rest of the system.
2. The reward system. Supervisors and managers cannot be expected to act counter to their own interests even for the good of the organization. When managers are judged based on the number of their subordinates or the size of their budget, they are not motivated to reduce manning and budget but, rather, to increase them.
3. The personal characteristics of individual managers. At times, characteristics of managers act to promote counterproductive behavior in subordinates. For example, if managers create an atmosphere that causes subordinates to hesitate to report bad news or if managers insist on making all decisions, even if some subordinates are in a more informed position, valuable problem-solving expertise may be lost or the problem understated.

In the public sector, Sherif (1976) has identified as impediments the "use or lose" annual budget system, budget allocations that do not closely follow program expansion or recession, and a personnel classification system that motivates managers to maintain or increase the number of their subordinates. Patton (1974) and a recent GAO report (1980a) discuss pay disincentives within the federal executive structure and the General Schedule that restricts pay at the top levels. As a result, most GS-15s are being paid the same salary as higher level executives in the Senior Executive Service.

Riedel, Young, and Sheposh (1980), in an investigation of employee motivation in six Navy Public Work Centers (PWCs), found that employees are motivated by work occurrences that reflect personal concerns (e.g., feelings of accomplishment) and demotivated by those that reflect negative task-related concerns (e.g., equipment problems). This finding suggests that impediments to productivity, as well as decreased motivation, may result when employees do not have the basic tools and supplies needed to accomplish their work.

Three recent undertakings within the federal sector have identified impediments that seem particularly germane to the present study. The first was a conference held in February 1980 by OPM in conjunction with the Office of Management and Budget and the General Services Administration (GSA). During this conference, which was entitled "Toward a More Productive Government," senior federal government officials identified a number of issues that affect government productivity. Some of the key issues and problem areas identified are listed below (OPM, 1980):

1. Participants noted that there should be greater flexibility in staffing and recruiting areas. Although they discussed methods of delegating recruiting and examining authority at great length, they were reluctant to accept new methods without knowing what local resources would be required. Thus, they suggested that OPM design model systems to help them estimate their needs.
2. Participants felt that the present classification system should be studied and revised. They felt that much of the paperwork and regulatory burden is beyond the control of agencies affected, and that Congress has mandated a large part of this burden.
3. The participants were especially concerned about the lack of clarity of the Inspector-General (IG) role. They were afraid that, since IGs' report to agency heads and to Congress, their mission loyalties would be blurred, and IGs would assume program evaluation duties as part of their functions, supplanting organizations that currently do this. In this light, they felt that IGs need to develop more contacts with program evaluation managers.
4. A number of discussions dealt with the distrust between line and staff personnel. One particular area of concern is the ratio of staff to line personnel. Some participants felt that staffs have been increased because line managers weren't trusted to meet reporting requirements. They felt that better communication might ease the problem.
5. A number of comments centered on the need for increased delegation of authority, flexibility for line managers, and resources to accomplish assigned tasks. Participants complained that, although they were faced with an increasing burden of regulations, they had no increase in monies or ceilings to meet the demands of these regulations. They felt that (a) ceiling controls should be eliminated in the face of strict budgetary controls, (b) their ability to implement programs had been seriously impaired because of insufficient delegation of authority to operating levels and regional offices, and (3) the federal government loses money because the line manager has no fiscal discretion or flexibility in purchasing required equipment and facilities.

In 1978, a conference on "Productivity and Work Motivation in the Navy and Other Military Services" presented an opportunity for policy makers and top managers in the military sector to surface the major issues they felt had an impact on military productivity (Broedling & Penn, 1978; Nebeker, Broedling, & Doherty, 1978). Some of the important impediments to productivity identified at this conference are listed below:

1. Lack of effective ways to measure productivity.
2. Lack of sufficient means to reward those who enhance productivity.
3. Systems or regulations that inadvertently punish those who enhance productivity.
4. People being promoted into supervisory and managerial ranks based primarily on their technical competency.
5. The need for improved relationships between management and unions in regard to productivity enhancement.
6. Management turbulence, particularly as a result of rotation of military officers and noncareer civilian appointees.
7. Lack of adequate training and development for career civilian supervisors and managers.
8. The need for improved relationships between military and civilian managers.
9. The excessive and often inappropriate use of inspections and audits.
10. The inappropriate use of management information and reporting systems which sometimes reward counterproductive behavior.
11. Lack of adequate capital investment.
12. Lack of adequate supply support.

A major conclusion drawn from the conference was that the major productivity issues confronting the military services are common or shared across services and functional areas within services.

Finally, in 1978, Dr. Ruth Davis, then Deputy Under Secretary of Defense for Research and Engineering (Research and Advanced Technology) established an ad hoc task group to identify institutional barriers inhibiting effective DoD laboratory management. The following paragraphs, which were excerpted from the report of the ad hoc task group, point out the collective impact of the institutional barriers that were identified (Institutional barriers on DoD laboratories, 1979):

First, an extensive and diverse array of controls on the DoD laboratories does indeed exist. Second, aside from some differences in implementation among the services, the controls are practically universal in application across all laboratories. Further examination revealed that these controls can be generally described in terms of the following characteristics:

- They originate from staff offices and organizations outside the RDT&E line management chain (that is, from offices not directly responsible for managing and executing the DoD RDT&E program).
- They prescribe limits on the use or consumption of particular resources.
- They are usually expressed in quantitative terms; this sometimes results in mechanistic approaches to implementation and assessment.
- They are administered through hierarchical levels of staff offices. At each of these levels, a control may be increased (made more restrictive on subordinate levels), but is never decreased.
- Perhaps most significantly, they are independent of the purposes served (or intended to be served) by the resources which they control.
- Controls have been applied piecemeal without apparent regard for other existing controls.

The result of these constraints is that the R&D laboratories today are overcontrolled by the imposition of numerous limitations that are largely independent of one another. Viewed separately, each of these controls represents an appropriate exercise of authority by higher management echelons over subordinate levels within the defense organization. Each has a legitimate purpose but their impact on the laboratories is negatively cumulative. Viewed separately, each is a form of suboptimization: an attempt to "optimize" (usually, to minimize the cost of) some particular aspect of laboratory operation without regard for the total organizational and program responsibilities of each laboratory.

In summary, it appears that a number of potential impediments to productivity do exist in organizations and that these impediments should be systematically addressed. As the DoD study pointed out, only when impediments are viewed as a total set will their negative impact on productivity be really understood. Also, since many of the impediments may be interlinked, dealing only with isolated impediments may sometimes be dysfunctional.

APPROACH

Participating Commands

Five Navy Material (NAVMAT) field commands were selected as representative of the major types of organizations in the Navy's industrial community. These activities are the Naval Shipyard (NAVSHIPYD) at Pearl Harbor, the Naval Weapons Station (NAVWPNSTA) at Concord, the Naval Air Rework Facility (NARF) at North Island, the Naval Supply Center (NSC) at San Diego, and the Public Works Center (PWC) at San Diego.

The total number of persons employed at these commands at the time of the study, as well as the percentage of military personnel stationed at each location, are presented below. While the absolute number of military personnel is small, military personnel head the commands and fill many of the top managerial positions.

<u>Activity</u>	<u>Total Employed</u>	<u>Percentage Military</u>
NAVSHIPYDPEARL	6091	0.8
NAVWPNSTA Concord	1292	9.0
NARF North Island	6160	0.4
NSC San Diego	1087	2.9
PWC San Diego	1972	1.0

The participating commands report to various system commands, which, in turn, report to the Chief of Naval Material. The missions of the five types of commands represented are described in the following paragraphs.

1. The primary mission of the naval shipyards is to overhaul Navy ships, including providing logistic support for assigned ships and surface craft. During overhauls, the shipyards perform numerous types of work, including conversion, repair, drydocking, and outfitting of ships and craft. There are eight NAVSHIPYDs and they report to the Naval Sea Systems Command (NAVSEA).

2. The naval weapons stations are responsible for the shipment and storage of ammunition and other hazardous cargo. They also provide material and technical support for ammunition, weapons, and weapon systems. There are five NAVWPNSTAs and they report to NAVSEA.

3. The mission of the naval air rework facilities is to provide major maintenance on naval aircraft and their components. Specifically, they are responsible for: (a) repair and overhaul of aircraft engines, components, and accessories, (b) operation of standards laboratories, (c) testing and calibration of reworked items, (d) rework of equipment under Naval Air Systems Command (NAVAIR) cognizance that is installed aboard naval vessels, and (e) necessary engineering operations. There are six NARFs and they report to NAVAIR through the Naval Aviation Logistics Center (NALC).

4. The mission of the naval supply centers is to provide full supply support to active and reserve fleet units and all naval shore activities. Also, they provide accounting, disbursing, purchasing, and contracting services, as well as operate self-service stores. There are six NSCs and they report to the Naval Supply Systems Command (NAVSUP).

5. The public works centers are service organizations that provide engineering, maintenance (including rehabilitation construction), utilities, transportation, and housing for U.S. Navy shore facilities. There are nine PWCs, each of which is responsible for serving customers in its geographical area, and they report to the Naval Facilities Engineering Command (NAVFAC).

Some of the above activities have access to local supply and public works support within their own organizations, while others rely on the NSCs and PWCs for their support. Thus, it is possible that shipyards, for example, could have supply and public works type impediments resulting from procedures within their own control.

Study Design

The study involved six sequential stages:

1. Cognizant personnel in the systems command directly responsible for each of the five types of field activities were contacted, briefed as to the purpose and goals of the study, and asked to provide information on potential impediment areas that might be investigated during on-site visits to the field activities.

2. Five research teams independently visited each of the field activities to gather information on perceived impediments to productivity. The teams used a variety of data gathering techniques in an attempt to be as comprehensive as possible within the time constraints of the study. These data gathering techniques are described on pp. 7-8.

3. Since the number of issues raised as potential impediments at the different activities was greater than could be pursued in detail by the number of researchers involved in and the length of time allocated for the study, they were pooled and classified into three categories:

- a. Impediments that appeared to be within the control of local field activity management (e.g., internal communications, local policies).

- b. Impediments that were common to more than one field activity but appeared to be beyond the control of local management (e.g., processing security clearances).

- c. Impediments that were unique to a particular organization (e.g., shipyards) but were beyond the control of local management (e.g., propeller repair waivers).

4. The issues raised during the second stage of the study, categorized under the above scheme, were fed back to the management at each respective activity. Impediments classified as being under local control were turned over to management of the respective activities for further assessment and/or action. For impediments classified as being beyond local control, managers were asked to indicate whether they considered them important enough to be pursued at higher levels, and whether these impediments could be substantiated through concrete documentation within the command (this was done to ensure that the identified impediment was more than a subjective impression). Although the final selection of impediments was by mutual agreement, an impediment was added to the list if either management or NAVPERSRANDCEN felt strongly that it should be pursued. After the final selection was made, top management identified key individuals in their commands who had cognizance over the problem areas. Researchers then contacted these individuals to gain a more complete understanding of the impediment, obtain documentation, and identify agencies and individuals at levels above the organization where the impediments could be further pursued.

5. To obtain information on the impediments considered beyond the control of local management, the researchers contacted personnel at the cognizant system commands, NAVMAT, other Navy and DoD agencies, and where necessary, other agencies outside of DoD, such as OPM. During these contacts, researchers attempted to identify the source of the identified impediments, and to gain an understanding of the rules, regulations, and decision-making processes that ultimately resulted in the impediments at the field activity level.

6. To determine whether the impediments identified at the field activities would also be seen as impediments by similar field commands at different locations, researchers contacted management personnel at an additional command within each activity type (e.g., shipyard, supply center) and asked them to indicate whether the impediments identified at their sister commands were also problems at their command, to indicate the degree to which the listed impediments affected their command, and, if possible, to add other impediments to the list.

Data Collection

During the second stage of the study, three different data gathering techniques were used at each of the field activities. The goal was to get input from as many different functional areas and levels within each organization as possible.

Structured Interviews

At each organization, researchers conducted interviews with key personnel--the commanding officer, executive officer, department heads, key division heads, and certain individuals named by the organization as good contacts. In most cases, interviews were conducted on a one-to-one basis, although operational requirements sometimes dictated group interviews.

Basically, interviewees were asked to describe what they felt were the major factors or impediments that keep them and/or their subordinates from accomplishing their job in the most efficient manner. Although individual responses were kept confidential if requested, in almost all instances, individuals were very open about discussing what they saw as impediments to their productivity. Researchers attempted to get managers to focus on concrete impediments that could be documented as opposed to everyday gripes.

Nominal Group Process

Because of the large number of middle managers and first-line supervisors, it was not realistic to obtain input from them by conducting face-to-face interviews. Instead, the nominal group process (Delbecq, Van de Ven, and Gustafson, 1975), which involves bringing together 10-15 individuals from different parts of the organization to form a one-time group for discussing or solving a specific problem, was used. The procedure is as follows:

1. The individuals first identify problems or suggest solutions to a problem on their own, depending on the purpose of the group. For this study, participants identified the impediments they saw in their own job.
2. Their ideas are presented via a structured format to other group members (all ideas are allowed to be presented).
3. Each idea is discussed and elaborated upon by the group and the group votes via secret ballot on those ideas that they think are most applicable or useful.

In the present study, four to six groups were run in each organization. The groups were composed of managers from different levels in the organization, such that no superior and immediate subordinate were in the same group. These "vertical slices" of the organization were used so that all the functional departments in the command were represented. The final voting procedure was used to identify the most critical impediments to productivity.

It should be noted that supervisors participating in the nominal groups were asked to solicit input from their subordinates prior to reporting to their group sessions. It was hoped that this would give more individuals a chance to provide inputs.

Questionnaires

To obtain input from nonsupervisory personnel, an open-ended questionnaire was developed and administered to a randomly selected cross-section of nonsupervisors. Respondents were asked to provide demographic information, such as grade, department, and tenure, and to respond in writing to the following question, "What do you see as the most important problems that keep you from doing your job as well as you could?" In addition, they were asked to indicate, when possible, what they saw as the causes and potential solutions to their problems.

In all organizations, the questionnaire was anonymous and workers were requested to respond on a voluntary basis.

Follow-up Interviews

During the final phases of the study, face-to-face and group interviews were used to follow up impediments at both the activity and headquarters levels. These interviews were structured in the sense that they were conducted around specific impediments and were aimed at expanding our knowledge of the problem. An attempt was made to conduct these sessions in the respondent's workplace to minimize disruption of ongoing work (i.e., we didn't want to be an impediment to productivity).

RESULTS AND DISCUSSION

The impediments covered here are those chosen by NAVPERSRANDCEN and field level personnel as the most important of those identified. Validation efforts conducted during the sixth stage of the study indicated that these impediments were also problems at sister commands. For each impediment presented below, a brief description of the issue, information obtained through follow-up interviews (stage 5) and, where possible, recommendations are given. For the most part, these recommendations were obtained in the various phases of the study from field and headquarters personnel familiar with the problems.

The impediments listed in the first section were reported at two or more of the field activities participating in the study. In this first section, specific impediments described are given to serve as examples of major types of problems. Those listed in the second section are each unique to a single type of organization.

Impediments Found at Two or More Activities

Supply Support

Although problems related to supply support were raised at all field activities, the most critical supply problem appeared to be the reported inability of the field activities to obtain the exact material needed in a timely manner. This results in work slowdowns, the cannibalization of other equipment for parts, and delays in starting or finishing projects. Although some aspects of this problem can be traced to the field activities themselves, the overall problem is an interactive one among the naval supply system, private vendors, and the activities supplied by these vendors.

Identified problems in supply support are described below.

Requisition Tracking. The supply departments at all the NAVSHIPYDs, except the one at Charleston, still track their material requisition documents by batch operations, resulting in a minimum 1-day delay in obtaining updated information. NAVPERSRAND-CEN was informed that an interactive terminal entry system, which has been operating at Charleston for nearly 2 years, is substantially more accurate and efficient for requisition tracking than the batch method. Therefore, it is recommended that an effort be made to expedite the installation of this system in other shipyards.

Material Acquisition. PWC employees reported that it takes longer to acquire material through PWC Material/NAVSUP systems than it does to acquire it directly from private business. When queried about this complaint, the PWC Material Department agreed that it was true, and noted that a study has been conducted to identify Defense Logistics Agency (DLA) materials stocked at PWC/NSC that are unique to civil engineering functions and are not used to support the fleet. Under the program, 8000 items have been identified and are being dropped from supply catalogs as current stock is exhausted. However, at present, if such items are not available locally for any individual PWC, they will again become DLA stocked items and must be acquired through the supply system. This requirement should be reviewed, since it defeats the original purpose of allowing PWCs to procure items locally. It is also recommended that NAVMAT support NAVFAC efforts to ensure a more decentralized and efficient PWC supply system.

Preexpended Bins. Some Navy industrial activities (e.g., NAVWPNSTAs, PWCs) maintain bins of preexpended supplies of high-use items (e.g., nails). Since dollar value limitations are placed on items kept in these bins, difficulties are encountered in stocking the bins with the variety of items required by workers, particularly since inflation has pushed the price of many items beyond the allowable bin limits. Also, this preexpended bin system creates problems for the naval supply system, which determines the amount of stock carried based on recurring supply requests. Since items carried in preexpended bins are often acquired in a massive "one shot" reorder rather than through consistent smaller orders, the number of requests for these items remains low and stock levels may not meet demands. Also, if the preexpended bin system is to be effective, the bins must be restocked with supplies as needed. It is recommended that allowance limits for preexpended bin items be reevaluated in light of current inflation rates and operational requirements, and that responsibility for stocking and maintaining these bins be clearly delineated.

Material Substitutions/Wrong Material. PWC employees report that vendors often make unacceptable substitutions for specific materials ordered. Warehousemen do not reject substituted items because they do not know whether material has been improperly substituted. Since PWC warehousemen positions are currently being downgraded to comply with OPM classification standards, it is unlikely that future incumbents will be more knowledgeable. It should be noted that wrong material delivery can also occur

because initial requests for ordering materials include inaccurate and/or insufficient information.

If this problem is to be resolved, supply and warehouse (receiving) personnel must be given appropriate training. Also, consideration should be given to the feasibility of either specifying "no substitutions" or listing acceptable substitutions on material requests. Finally, the problem could be reduced if requestors were required to provide detailed descriptions and a name and phone number where they can be reached if there are problems in filling the orders.

Not-In-Stock Items. When needed materials are not in stock, personnel must either order through the supply system or attempt to buy the material locally via a blanket purchase agreement (BPA) (a contract to purchase material outside the regular supply system). Field activity representatives have indicated that there are often considerable delays in ordering materials from the supply system and that local costs are often competitive with supply system costs. To resolve this problem, a system needs to be developed that allows field activities flexibility in ordering merchandise from the private sectors in emergency situations, while not subverting the functions of the naval supply system.

Defense Acquisition Regulations. DAR requirements to justify special acquisition procedures have seriously affected lead times in shipyards, where large amounts of material must be purchased and promptly delivered prior to completion of an overhaul. Because of many unique purchase situations, DARs may not be well suited to a shipyard environment.

For example, in the past, shipyards could make urgent or high priority purchases without going through formal advertising requirements. Since October 1979, however, when DAR requirements were revised, shipyards have been required to prepare additional documentation before they can bypass the time delays created by formal advertising. As a result, there have been increasing delays in acquiring high priority materials.

At Pearl Harbor Naval Shipyard, bids for approximately 15 percent of formally advertised purchases had to be cancelled and reissued, primarily because of potential contractor failure to meet delivery requirements. Thus, their bids were judged to be nonresponsive. Because shipyards overhaul both sophisticated and outdated equipment, the supply department must purchase both new and relatively obsolete components. Since contractors often cannot provide such components within the time requirements of high priority purchases, purchase orders must often be reissued, which results in an increase of 30 days or more in the contracting lead time. The problem has increased dramatically with the constraints on urgent purchases. During FY 1979, Pearl Harbor formally advertised 18 percent of its contractual actions, compared to 50 percent in the first three quarters of FY80.

A second problem area concerns unplanned or emergency purchases, which occur when there is a high-priority, after-hour or weekend requirement for services or materials. Current DAR requirements do not authorize "oral" contracts in excess of \$10,000; however, in emergency situations, it is impossible to negotiate and issue a written contract. As a result, shipyards issue a confirming oral purchase order under 10K to get the contractor to perform services immediately, and then issue a second order to cover the additional amount of the purchase. This results in the issuance of two documents when one would suffice. Although DAR requirements do provide for emergency requirements by allowing the issuance of letter contracts, which must be in writing and be approved by higher headquarters, such procedures do not allow for a timely response to an emergency. In summary, shipyard supply departments operate within the

framework of critical overhaul schedules, and their inability to respond to emergencies can impact on the effectiveness and efficiency of shipyard overhauls.

Supply departments at several field activities have begun to question the requirement of awarding small (e.g., less than \$10K) business contracts to minority and/or female-owned businesses. They feel that this requirement results in using industrially funded units to solve social problems and creates unnecessary delays. A DAR representative pointed out that this particular regulation was upheld by the Supreme Court, and that numerous funding levels are tied to legislated actions. He added, however, that Air Force representatives have asked that the impact of this regulation be examined.

Finally, Walker (1979) has noted that the arbitrary 10K limit for purchase orders places an increasing burden on supply departments. Supply requests above 10K necessitate a formal contract, with a resultant increase in paperwork and acquisition time. At present, there is no mechanism for building in an inflation factor to the purchasing thresholds.

Lack of Parts. The NARF reported a serious lack of aircraft parts, which results in an interruption of the production process. If shop and production support personnel fail to obtain the missing part through such actions as querying local supply sources and/or "backrobbing" from aircraft or components awaiting repair, a requisition may be forwarded through established supply channels. The time supervisors spend chasing missing parts reduces the time available for supervising production operations.

Material personnel at the Naval Aviation Logistics Center (NALC), the NAVAIR Systems Command, and the Aviation Supply Office (ASO) were contacted to obtain more information on this issue. Several factors were seen as contributing to the parts shortage:

1. Shortage of funds. Because of the lack of funds, the support material availability (SMA) level has been below 85 percent of goal over a considerable length of time. This figure represents the percentage of parts that should be on hand for aircraft rework; the remaining parts are acquired through priority requisitions.
2. Suboptimum inventory decisions. Factors reported as contributing to this problem include faulty scheduling of repair work, errors in the replenishment formula, and inaccurate material requirements forecasting.
3. Errors in material accounting. Contributing factors include an inaccurate budgeting data base due to the transfer of job charges to job numbers other than the one being worked, use of wrong job numbers on issues, and the ordering of multiple items under single requisitions.
4. Lack of supply discipline. Contributing factors include the issuance of stock-room materials in quantities beyond immediate requirements, haphazard submission of demand documents to the Inventory Control Point, and poor recording of backrobbing.
5. Proliferation of unique NARF ADP processes. Many of these ADP systems have critical inadequacies. For example, they are unable to communicate with the supply system computers or among themselves. The subsystem interface often is handled manually.
6. Lack of control of material resources. Examples include concurrent acquisition, premature return of items still needed, and difficulty in using current system and procedures to identify resource availability.

A number of programs are underway to reduce the severity of the parts shortage problem to wit:

1. Funding has recently been increased. According to ASO personnel, recent procurement programs have not been hampered by a lack of funds. NAVAIR SYSCOM personnel indicated that funding close to levels required is expected in FY 81. This additional funding should be sufficient to provide an additional "layer" of parts in the supply system and should help to reduce the severity of the parts shortage problem.

2. The NAVAIR Industrial Material Management System (NIMMS) for supplying the NARFs is being reviewed to identify any areas that could be modified to improve material support.

3. The Automated Storage Kitting and Retrieval System (ASKARS) is being procured for the NARFs. This system should improve their ability to provide material support to production processes.

4. A special effort is being made to minimize practices that are distorting historical parts usage data. Such distortions or errors translate into procurement errors at the ASO. This effort includes the implementation of a program to provide special training to NARF supply-related personnel.

5. Operational Support Inventories (OSIs) are being installed to provide a protected inventory of parts and materials for the NARFs.

6. Industrial demand forecasting procedures have been implemented to advise the NARFs' ICP (Inventory Control Point) of their anticipated "bits and pieces" parts requirements for the next 2-year period.

7. Procedures are being developed to reduce the inventory of "G" Condition components (those delayed for lack of parts).

8. An attempt is being made to standardize the material support functions within the NARFs. As a part of this effort, the NALC continually reviews, revises, and provides data to the NARFs to facilitate standardization.

Production Support. NARF reported that its production support was inadequate in a number of areas. In terms of production control, examples were cited of late part deliveries, incomplete orders delivered, lost parts, lack of support to find missing parts, and failure to keep bins of expendable parts fully stocked. With regard to the examination and evaluation (E&E) of the extent of needed aircraft repair, work required in repairing components and aircraft was not always completely identified. In some instances, E&E personnel were not available to perform the examination and evaluation.

The materials laboratory is seen as requiring an excessive amount of time to certify nonstandard materials, and the turnaround time for the repair of test equipment is perceived by foremen as being excessive. This latter appears to stem from the poor condition and obsolescence of test equipment, a shortage of repair personnel, and an emphasis on batch processing rather than accepting work as it is presented. Finally, there was concern that the equipment is not maintained adequately and that there are too many errors and omissions on blueprints and in engineering data.

Interviews with management and support personnel helped identify several factors that contribute to production support problems including: shortage of support personnel, excessive time spent searching for missing parts, an inadequate Management Information

System (MIS), lack of a functioning production information system, and turnover of personnel, which reduces the effectiveness of the workforce.

A number of programs have recently been implemented at NARF North Island and other NARFs to reduce the severity of the support problem. These include the following:

1. Improved industrial demand forecasting procedures, as described above, have been implemented.
2. The Production Planning and Control Department has been reorganized to provide more direct support to the production divisions. Under this reorganization, for each division and branch in the Production Department, a corresponding division and branch was created in the Production Planning and Control Department. As a result, both responsibility and accountability for providing necessary support are clearly defined.
3. New emphasis is being placed on the E&E program in an attempt to revitalize it. Also, new policies are being implemented to reduce the negative effects of conflicts between E&E and quality assurance (QA) personnel.
4. The ceiling for support personnel has been increased by 5 percent.
5. A study has been implemented to define the requirements for support of the Production Department.
6. A study has been implemented to identify the training requirements for support personnel.
7. A "Quality Circle" consisting of Production Control personnel who suggest methods of improving quality has been formed.
8. An on-line Maintenance Data Record (MDR) system is being implemented to save time and to expedite worker access to data needed to accomplish rework functions.
9. A mechanized equipment calibration maintenance program to improve quality and to help alleviate maintenance problems is being developed.

Equipment Problems

Equipment problems were mentioned as impediments at all activities studied. In general, the problems included: (1) having to use out-dated equipment, (2) difficulties in procuring new equipment, (3) insufficient numbers of vehicles and necessary tools, (4) equipment and vehicle breakdowns, and (5) inadequate facilities. These problems cause delays in getting work done and contribute to overall inefficiencies.

Locomotive Equipment. Activities that use locomotives frequently have experienced problems concerning their maintenance and repair. Often, parts have to be manufactured because the original vendor has gone out of business.

A NAVFAC Engineering Command representative in the Western Division stated that, although the Navy has not purchased any locomotive equipment for the past 25 years, he believes that most locomotive parts could be obtained from the General Electric Company. (This has been no problem for NAVWPNSTA Concord. Since the Navy stores the locomotives it purchased from the Army after the Korean War at Concord, the NAVWPNSTA has more locomotives and locomotive parts--albeit in poor condition--than it needs.) The NAVFAC representative added that NAVFAC was opposed to a locomotive

overhaul program to be proposed to CNM but he did recommend that serious consideration be given to acquiring a rail car mover manufactured by Cline. Each unit costs about \$80K, needs half as many people as locomotives do to operate, can pull up to 13 railroad cars, and can drive off tracks with its fifth wheel to spot trailers. NAVWPNSTA Concord and NAVSEA should contact the NAVFAC transportation division to obtain more details on this rail car mover.

Replacement of Transportation Equipment. Several activities cited the need for replacing aged transportation equipment. PACDIV Transportation Field Divisions analyze equipment replacement needs of activities and make recommendations to CINCPACFLT as to how best to allocate the transportation equipment points they get from CNO. Replacement needs are projected on a 3-year cycle (FY80 needs were projected in FY77), and the highest priority needs are filled first. In the past, approximately one-third of the projected needs have been funded each year; thus, two-thirds of the aged equipment still needs to be replaced.

Because of the length of time it takes to acquire vehicles and the typical lack of adequate funds, activities tend to procure vehicles through other programs (e.g., Fast Payback or Productivity Enhancing Capital Investment). While this type of purchase is justified and the cost savings can be documented, it can result in potential coordination problems. For example, the questions that could arise include the following:

1. What effects will such purchases have on the whole need analysis/recommended purchases process?
2. What will happen if these purchases cause CINCPACFLT's eligible inventory to drop below 15 percent? At present, if it drops below 15 percent for a specific category of vehicle, no vehicles of that type can be acquired for CINCPACFLT claimants.
3. What will happen to the budgets of SYSCOM and other activities if new equipment acquisitions are acknowledged?
4. If PACDIV Transportation Field Division analysts are the "experts" in transportation equipment needs analysis, shouldn't they be consulted regarding the priority of an activity's need perceptions before funds are allocated?

Vehicle Downtime. From January to March 1980, the downtime for vehicles in the PWC Maintenance Department ranged from 11 to 16 percent. This has resulted in the following:

1. The rental of replacement vehicles during the time it takes to make repairs.
2. A lack of vehicle preventive maintenance, which leads to more frequent breakdowns.
3. Lost man-hours in production and in transporting vehicles to and from repair facilities.
4. Continued use of vehicles in need of repair.

Material Handling Equipment. Several activities mentioned that various types of Material Handling Equipment (MHE) were either in short supply or were old, and thus frequently inoperative. The long (2 years) acquisition cycle for MHE was also mentioned as a hindrance.

NAVSUP representatives stated that, although 53 percent of all MHE now in use should be replaced because of age, substantial MHE budget cuts have made such replacement difficult. In a recent GAO report (1980b) on the Navy's use of MHE, it was concluded that (1) a control program for MHE maintenance and allocation is needed at the local level and (2) because many activities have more MHE than authorized, it appears that existing MHEs are underutilized. NAVSUP representatives agreed with the first conclusion but not with the second, stating that the GAO may have failed to recognize the potential impact of mobilization on use of MHE. If the number of MHE is reduced based on peacetime use, certain activities (e.g., weapons stations, supply centers) would be particularly vulnerable to MHE shortages during mobilization periods.

Also, there was concern at the local level about potential losses in flexibility due to centralization of MHE programs. It is recommended that NAVSUP evaluate the central MHE program in use to determine its overall costs (particularly in terms of loss of flexibility) and benefits and, based on results, develop guidelines for future central programs.

Obsolescence of equipment and technology. Obsolescence of equipment and technology was identified as a major impediment to productivity at NARFs and shipyards. The impact is felt in a number of ways:

1. When obsolete equipment is used, more time is required to produce a desired end product.
2. Frequent breakdowns place an additional load on an already overloaded maintenance staff. Likewise, parts are difficult to find for aged equipment, resulting in additional downtime.
3. Greater skill and more manpower are often required to produce a quality product. Modern equipment automatically performs many functions that must be performed manually with obsolete equipment.

This issue is primarily a dollar problem. Investment in major capital equipment (and facilities) has fallen far below the level required for optimum efficiency. At the Pearl Harbor NAVSHIPYD, a substantial portion of the equipment is pre-World War II vintage, with some items being purchased as long ago as 1914. Although NAVSEA has a long-range shipyard modernization program, it will provide little help in the next 5 years.

Three programs have provided some relief to the NARFs and shipyards: (1) Fast Payback, (2) Productivity Enhancement Capital Investment (PECI), and (3) Cost of Ownership Reduction Investment (COORI). The programs differ as to the type of funding and sponsor (DoD, Navy) but all require that equipment be justified on the basis that savings obtained pay for the equipment in a short payback period (3-4 years). While these programs are an important step in the right direction, they cannot fully compensate for the historical and current lack of adequate capital investment, since many required projects cannot be justified under short payback periods. Therefore, NAVMAT must continue to place heavy emphasis on the modernization of industrial activities. This may be the number one area for improving future productivity.

Facilities. To some extent, all activities complained about their physical work environment. Common conditions reported included (1) noisy, cramped working spaces and offices, (2) poor communications due to physical layout of shops and offices, and (3) uncomfortable temperatures.

Tools. Craftsmen at the various activities reported that the number of tools was inadequate and that many of those available were in poor condition. They said that they were not able to find necessary tools, had to use makeshift tools because appropriate tools were not available, and had to use the low-quality tools that their activities had to buy.

Automated Data Processing Equipment (ADPE)

A recent GAO report (1979) noted that "Although the automated data processing (ADP) program makes up less than 2 percent of the total Navy budget, without computers the Navy would find it difficult to navigate its ships, fly its airplanes, repair engines, draw up budgets, issue spare parts, or prepare paychecks." It is true that today's Navy, which has over 1000 computer configurations around the world and a computer operating budget of over \$500 million, is heavily dependent on ADP to carry out its assigned missions and to manage day-to-day operations. Some of the problems related to ADP are discussed below.

Management of ADP resources. ADP resources within the federal government are managed under a complex hierarchy of regulations. The capstone of this hierarchy is Public Law 89-306 (sometimes called the Brooks Amendment), which provides the basic structure of and concepts for the government-wide system of ADP management. P.L. 89-306 was passed by Congress in 1965 in response to reports of pervasive mismanagement of ADPE in the federal government. Its stated purpose is "to provide for economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by federal departments and agencies." The intent of Congress was "to achieve a businesslike government-wide coordinated management effort" by providing a "delineation of responsibilities and stronger organizational plan for government ADP management" (Senate Report No. 938, 1965: 3877). P.L. 89-306 did not establish specific administrative or acquisition policy. Rather, it set up a centralized ADP management structure in the Executive Branch that would allow policies to change as circumstances and the industry change. However, some claim that, since the dramatic changes in computer technology have not been accompanied by needed changes in policies, the effect of this law has been to impede use of ADP resources.

P.L. 89-306 structured ADP management by assigning responsibilities to various organizations within the federal government. The Office of Management and Budget (OMB) (then the Bureau of the Budget) was assigned responsibility for policy and fiscal matters; the General Services Administration (GSA), for ADPE procurement (i.e., purchase, lease), maintenance, and utilization; the Department of Commerce (which delegated its duties to the National Bureau of Standards (NBS)), for providing technical advice to GSA and user agencies and for developing uniform ADP standards for the federal government; and, finally, the user agencies (e.g., Department of Defense), for such tasks as developing system specifications and selecting the types and configurations of equipment needed. The Brooks Amendment was implemented for the Navy industrial activities by the promulgation of a series of circulars, orders, directives, instructions, and manuals from OMB, GSA, the Department of Defense (DoD), the Secretary of the Navy (SECNAV), and the Navy Material Command (NAVMAT). Because of the proliferation of special rules concerning the acquisition of ADP resources in general and ADP equipment in particular, the governmental ADP regulatory system has been described as "incomprehensible," "unworkable," "filled with potentially conflicting rules," and "an outright impediment to productivity."

Centralization is the fundamental concept behind the current complex system. It was felt that centralized control would foster a procurement environment that is both competitive and cost minimizing (e.g., via quantity discounts), and that equipment would be used more efficiently and effectively if concepts such as ADPE reutilization and sharing/pooling were instituted. An examination of the legislative history of the Brooks Amendment reveals that this centralization concept was based, to a significant degree, on

the technology of its time. Extensive use of expensive, large centralized computers with timesharing capabilities was the norm, and it was expected that the ADP industry was evolving towards even larger machines with components that would be increasingly standardizable and compatible among manufacturers. As a result, an acquisition system was designed to control equipment expenditures, which accounted for the bulk of automation costs. A review of computer history, however, indicates that these expectations were not fulfilled. Instead, low-cost, small-scale computers, such as minicomputers and microcomputers, have become prevalent and the rapid evolution of computer technology has inhibited both standardization and compatibility. The bulk of the cost in ADP acquisition is now in the software (e.g., data base management packages, custom application programs, compilers, and operating systems). While current problems in ADP management cannot be blamed solely on these technological miscalculations, they are frequently cited as significant causes of such problems, some of which are discussed in the subsequent sections.

There are a number of similarities in the current ADP environment at the five NAVMAT industrial activities included in this study. First, the SYSCOMs operate and maintain, for each activity type, an independently designed management information system (MIS) that performs essentially the same function. Second, all five activities interact with central design agencies (CDAs), which are responsible for maintaining, modifying, and enhancing their standard MISs. However, since the CDAs generally do not have adequate resources to keep the commandwide MISs current with user needs, user activities have to append/modify the standard systems or develop local computer programs for use independent of their standard system. All activities are performing centralized, batch system processing on computers that either are nearly obsolete or incapable of supporting the current needs of the activity. Further, these systems generally suffer from cumbersome input, inflexible data bases, and voluminous, inflexible output. Finally, all activities must look to their SYSCOM for ADPE acquisition. Across the SYSCOMs, five independent MIS systems have been developed, each of which is designed differently and, for the most part, runs on equipment from different manufacturers. As a result, little standardization exists across similar functions (e.g., payroll and financial accounting) and interface problems occur between field activities (e.g., NARFs and NSCs).

Acquisition. ADPE acquisition is a topic of major concern, particularly in regard to (1) excessive justification/paperwork, (2) time delays, particularly in the approval side of the process, and (3) the definition of what constitutes ADPE.

While most individuals interviewed felt that the basic acquisition policies were appropriate, they expressed concern about the procedures through which these policies are implemented. This concern was evidenced through comments and complaints about excessive justification and paperwork, the level of detail required, the lack of clarity, and the number of the instructions to be followed. Generally, they felt that procuring ADPE items was very expensive and time consuming due to the effort expended in preparing documentation (e.g., specifications, plans, economic analysis). In some cases, the cost of the documentation literally exceeds the cost of the item. As a result, many commands have turned to outside contractors for help in producing the required proposal packages. In this regard, a new planning/acquiring process, called the life cycle management (LCM) concept, has been introduced. Although the process emphasizes early decisions that influence costs and utility of automated information systems, it is not yet sufficiently documented and, consequently, not well understood.

A second problem concerns the centralization of acquisition approval and procurement authority. Field representatives indicated that the time it takes to acquire

equipment can be longer than the expected life of that equipment, and mentioned acquisition periods of from 6 to 15 years as worst case examples. The fact that the computers supporting every industrial activity observed are either virtually obsolete or incapable of supporting that activity's current needs suggests that excessive time delays do exist. The acquisition process has two separate steps--approval and procurement. Although representatives reported problems in the procurement step (e.g., dealing with GSA, which has authority but is not accountable to the acquiring organization), they unanimously agreed that the most significant delays occurred in the approval process. There are a number of reasons why this is true. First, the centralization of approval authority at high management levels has been complicated by the rapidly increasing volume of ADPE requests, especially for relatively low-cost, small-scale equipment. To adjust the control system to adapt to this increase, the ADP steering committee for the Assistant Secretary of the Navy for Financial Matters (ASNFM) has made an effort to decentralize the approval authority by raising thresholds at which sequentially higher levels of command would become involved. Second, there are delays in acquisitions because of the lack of training or education in both the ADP acquisition process and ADPE technology. Generally, personnel at the ADPE user/activity level need to learn about the acquisition process; and high level management personnel in the approval chain, about advanced ADPE technology.

A third problem is the difficulty in deciding whether an item is or is not ADPE, and hence whether all the ADP-related regulation procedures must be followed to acquire it. This situation occurs because more and more computer components (e.g., microprocessors) are being used in nontraditional applications (e.g., word processing equipment and calculators). In many situations, logical arguments can be made for or against classifying a particular item as ADPE. Within the federal government, GSA is responsible for classification of property. GSA carries out this function by evaluating items and assigning them to a Federal Supply Schedule (FSS) Group--Group 70 is ADPE. Since GSA cannot evaluate and classify every product manufactured, it issues definitions and guidelines to assist in classification of items not appearing on the FSS. Reportedly, the lack of clarity in the guidelines and a lack of standardized training has resulted in confusion and nonuniformity in processes used by the various agencies.

All five SYSCOMs are currently having problems with the acquisition cycle in conducting various projects. Examples of such projects include NAVFAC's replacement of major hardware, NAVAIR's acquisition of modern source data acquisition equipment (SDAE), NAVSEA's remodernization plan (to include ordnance stations and shipyards), and NAVSUP's peripheral resolicitation and stockpoint logistics integrated communications environment (SPLICE). Numerous efforts are underway or have recently been completed to help alleviate this general impediment. These include:

1. Raising the approval thresholds initiated by ASNFM.
2. Increasing the planning horizon to 20 years and requiring details for the first 5 years.
3. Providing training/documentation (through the Naval Data Automation Command (NAVDAC)) concerning the life cycle management process to the user agencies/requesters.
4. Increasing the number of Navy Regional Contracting Offices (NRCOs) dealing with ADPE from three to seven.

5. Developing (through NAVMAT via contract) an ADP Contracting Management Course for technical personnel. (The Department of Defense Computer Institute (DoDCI) has one at the DoD level).

It is recommended that more emphasis be put on these projects, particularly those dealing with training and education for ADPE claimants.

MIS Design and Support. The current MISs were designed and implemented in the late 1960s and were tailored for the computers of that time period. Most of those machines are still in operation and, owing to failures in standardization and compatibility efforts within the industry as a whole, the software (e.g., MIS) is either unique to or coupled with the existing hardware. In short, if one cannot increase hardware capability, one is hard pressed to enhance software capabilities significantly. With the state-of-the-art abilities advancing so rapidly, there is little motivation for private industry to develop software tools (e.g., data base management and query languages, high level programming languages, and special application packages) that are operable on "obsolete" equipment. Thus, the SYSCOMs must either turn to their own in-house programming capabilities to maintain and enhance their standard MISs, or revise new software to run on whatever equipment can be found.

Because the industrial activities within a SYSCOM have similar information requirements, their MISs lent themselves to standardization. To accomplish this, the major SYSCOMs established central design activities (CDAs), organizations comprised of systems analysts and computer programmers, to take responsibility for the design, development, implementation, and maintenance of MISs that are common across similar types of activities.¹ Although CDAs are not involved in computer operations, except for test bed machines, and are not considered system users, they are responsible for assuring that MISs are modified and enhanced to meet the ever changing information requirements of user activities. All the CDAs follow the same general procedures in satisfying user requests for system changes and enhancements. Periodic meetings are held with representatives of user activities to discuss and define system changes. Requests for changes are assigned priorities either by user activities or parent commands. Some time is set aside to complete work already in progress and to make mandatory changes directed by higher authority. The remaining time available is allocated to work on the list of new change requests, which represents the CDA workload for the ensuing period. CDA backlogs occur when resources are not available for change requests; backlogs of 1 or 2 years are currently not uncommon.

CDAs face numerous operational problems. One such problem is resource acquisition; specifically, people and ADPE. ADP personnel generally are considered as scarce resources and the CDAs are in a constant battle, particularly with private industries, to attract and retain qualified people. As a result, the CDAs are viewed as not having adequate personnel to maintain and enhance current MISs. The ADPE acquisition problem, as described above, impacts CDAs at two points in time: first, when the

¹The following are the CDAs for the types of activities that participated in the study: (1) PWCs--Industrial Management Division at PWC San Diego; (2) NARFs--Navy Air Logistics Center (NALC) at Patuxent River, MD; (3) NSCs--Fleet Material Support Office (FMSO) at Mechanicsburg, PA; (4) NAVWPNSTAs--Central Naval Ordnance Management Information System (NOMIS) Office (CENO) at Indianhead, MD; and (5) NAVSHIPYDs--Computer Applications Support and Development Office (CASDO) at Portsmouth, ME. (NAVSEA is in the process of combining CENO and CASDO to create the Sea Applications Support and Development Office (SEAASDO) at Indianhead, MD.)

required test bed equipment is being acquired for the design and development phase and, second, during implementation, when all the activities receiving the new system need the new equipment. Thus, even if CDAs had the personnel, new system development work would be delayed because of acquisition problems.

Problems were also reported with the CDA concept. One problem is that users perceive CDAs as being divorced from the user community for the following reasons:

1. The fact that CDA personnel are generally not trained in the technical aspects of the user environment.
2. The geographical separation between the user activities and the CDA.
3. CDA's lack of accountability to the user for task accomplishment, which is evident when priority is given to programs/systems that suit the needs of higher level management but are not related to the user community's work.
4. Communication channels between CDAs and users generally have not been clearly established. In most cases, formal communication is accomplished via the SYSCOMs, which only widens the gap between CDAs and the user activities.

A second problem is that, in some cases, the standardization concept has been taken to extreme, causing broad designs that are not satisfactory to real individual needs and that take an extraordinary amount of time to specify.

Because of the problems in the concept and operation of the CDAs, the user activities are not sufficiently supported. As a result, they are forced either to modify their standard systems or develop local computer programs for use independent of the standard systems. One consequence is an obvious duplication of effort, and another is the surreptitious acquisition of ADPE to support needed applications.

Current efforts in this area are aimed at either the equipment acquisition problems or personnel problems. Proposals concerning the latter are to improve training and career management of ADP people within the Navy. It is recommended that NAVMAT support such efforts. It is also recommended that NAVMAT design and implement an integrated (across SYSCOMs) ADP plan that would allow for the centralized development of systems that control similar functions and further nurture the standardization concept whenever appropriate.

Training. A final issue concerns ADP training. The field activities complained that the lack of available MIS training has led to inadequate use of current systems. Although the CDAs are responsible for providing the needed documentation and expertise, they have been unable to perform this function due to inadequate resources. Therefore, it has been left to the individual activities. Moreover, the MISs are a collection of subsystems with varying histories and depth of documentation. Since they have all evolved over a considerable time period, an integrated description of them is virtually nonexistent. Each activity understands its application of the system, which may bear little resemblance to another activity's system. Most likely, each activity has customized its own MIS to the point where a MIS training presentation based on the "standard" system would be of little use. In conclusion, the lack of MIS training is only a symptom of the Navy's decaying ADP management system. Because of all the other problems, training appears impractical. No one has the information or resources needed for training, and many other problems have much higher priority.

ADP Improvements. NAVDAC has recently produced a long-range plan (Navy Long Range Plan for Automated Information Systems for FYs 1983-1987), and published the following goals for improving the ADP system (from NAVDAC Management Plan, June 1980):

1. Streamline and speed up the review, approval, and acquisition process related to ADP in the Navy.
2. Improve training and career management of ADP people within the Navy.
3. Develop means of judging performance of ADP organizations.
4. Implement integrated ADP planning on a Navywide basis.
5. Reduce vulnerabilities in automated systems in the Navy.
6. Develop standard procedures for ADP functions in the Navy.
7. Achieve more responsive and efficient management of Navy ADP resources.
8. Reduce overlaps and duplications of ADP hardware/software in the Navy.
9. Promote better understanding of Navy ADP needs and achievement at higher levels.

These goals, if achieved, would alleviate the impediments discussed in this section. However, the NAVDAC is a young organization and will need substantial help in achieving them. Thus, it is recommended that NAVMAT establish a headquarters level committee to periodically review ADP management decisions and to coordinate and facilitate needed reforms within NAVMAT regarding the acquisition and management of all ADP resources (hardware, software and personnel). This committee, which would consist of representatives from user activities, CDAs, and SYSCOMs, would also act as a negotiator/facilitator between NAVMAT and pertinent organizations external to NAVMAT (e.g., GSA and NAVDAC).

Erratic Workload

Several activities cited productivity issues related to the uneven workload flow. Although they recognize that this problem is caused, at least in part, by the priorities set for the operational Navy, they feel that more effort should be made to level out some of the controllable work flow. For example, the projected workloads for Pearl Harbor Naval Shipyard are heavy for FY81 and FY83 and light for FY82. Because of such fluctuations, it is difficult for the shipyard to maintain an efficient workforce across the 3-year period. At NARFs, aircraft and components entering for repair constitute the inputs to the production processes. Since there are often interruptions and irregularities in the flow of this material into the NARF, the production shops sometimes have too little work; and at other times, too much. This erratic workload affects the production shops in a number of ways.

When a shop has too little or no work, shop personnel must be loaned to other shops that do have work. This tends to create a high turnover of personnel among shops. A new worker in a shop may not have had the opportunity to become skilled in his present assignment before he is loaned to another shop, where he may be faced with learning a completely different job. If the workload in this shop dries up, he may be sent to still

another shop. As a result, an extended period may elapse before the worker becomes skilled at any one job.

Journeyman workers may likewise be adversely affected. When a journeyman is loaned to another shop, he may be faced with learning a new skill or working on a job requiring minimal skills. Instances were reported of journeymen being trained by apprentices.

The foremen are reluctant to loan their good workers to other shops for fear that they may not get them back when needed. Thus, both workers and foremen resist the practice of rotating workers among shops to compensate for peaks and valleys in the workload.

A shop may have too much work for a number of reasons. For example:

1. If inputs do not arrive until the quarter is well advanced, a shop may have to put in extensive overtime to meet the quarterly quota.
2. Additional requirements may be imposed above normal quotas to meet unexpected demands from the fleet.
3. Quotas may be set at a level requiring overtime. If the overtime is excessive, morale may suffer.

From information obtained from interviews with NARF, NALC, and ASO management personnel, it appears that the erratic induction rates are due to the following factors:

1. Shortages of funds needed to maintain an adequate inventory of replacement components for the fleet. With the inventory at its present level, turnaround time for component repair is too short. One NALC executive described the situation as a "hand-to-mouth" existence.
2. Unscheduled changes in available funding. The funding situation in recent years has been highly volatile. As a result, the NALC has had to employ a relatively large group solely to "juggle" priorities and workload to match available funding.
3. Changing tempo of fleet operations. Unexpected changes in the tempo of fleet operations may increase or decrease the number of flying hours. This directly affects the amount of repair work required of the NARFs.
4. Irregularities in the rate at which the fleet submits components for repair. Negotiations between the NARFs and the ASO as to production levels for future quarters are based on the expected number of components the NARF will receive during a quarter. As a rule, the NARF accepts a quota that corresponds to the expected input rate of components. Because of the limited number of components in the pipeline, normal irregularities in this rate create corresponding irregularities in the NARF workload.

A number of times, NARF management personnel made statements to the effect that handling an erratic workload is part of the NARF's mission. If this assumption is true, it may be that an erratic workload cannot be avoided. It can be stated with certainty, however, that it does decrease productivity.

Programs implemented at the NARFs to reduce the severity of the erratic workload problems include the following:

1. Implementation of material forecasting for "bits and pieces" parts.
2. Implementation of the CLAMP and High Burner programs, which emphasize batch loading of components into the NARFs.
3. Formation of "Quality Circles" to give workers a voice in solving production problems and to deal more effectively with temporary transfers of employees.
4. Implementation of productivity incentive programs.
5. Increase carcass (component) procurement to create pool-stock necessary to stabilize production inputs.

Military Rotation

Both civilian and military personnel raised examples of problems related to the turbulence caused by the relatively frequent movement of military managers. For example, the average length of time officers spent at the PWC during the past 4 years was 25 months. The military manager feels that taking on a new leadership position includes such tasks as correcting problems that preceded his arrival, learning what the job is all about before being able to make a useful contribution, gaining the confidence of subordinates before they will give full support, and facing the reality that several of his subordinates may receive a higher salary than he does.

The civilians view the situation somewhat differently. First, they see the leadership billet as one intended to offer training to the military person, and do not feel that the incumbent is capable of immediate decision making, particularly if he has had no recent experience with civilian subordinates. Second, they anticipate that the new leader's lack of experience will not deter him from instituting immediate changes. This leads to an inverted U-shaped curve of unit activity throughout a given tour; that is, a slow start-up due to uncertainty about the leader and his lack of training, which is followed by an accelerated efficiency, and then by a sharply reduced effort in anticipation of a new leader. Third, high level civilians view their avenue to promotion blocked since the top position in their work group is reserved for a military person.

The military managers mentioned that there was some reluctance to "civilianize" military positions because of the length of time needed to remove civilians if they are not acceptable. Civilian managers acknowledge the delays but added that such situations could be minimized by making selections based on demonstrated capabilities and experience. Also, military managers feel that many key positions require a "blue suiter" because of the need to work closely with fleet personnel.

A number of suggestions were offered by both military and civilians for reducing the impact of military turbulence at industrial activities. These suggestions are listed below:

1. Offer training for military managers that emphasizes the management of civilian employees.
2. Consider extending the length of tour for military managers.
3. Review military positions to identify those that could be filled by a civilian. Selection and appraisal devices should then be developed for use in evaluating and selecting candidates for identified positions.

4. Replace military deputies with civilian deputies where possible, or assign civilians as deputies to military managers so there will be minimal disruption in the organization when military personnel are rotated.

These suggestions must be considered in light of the number and type of managerial positions at each organization. Some Navy organizations are staffed by so few military officers that it would not be wise to civilianize. Each organization's managerial needs should be evaluated independently before policy changes that would affect all organizations are made.

Micromanagement

Field activities often feel that the SYSCOMs and higher levels in headquarters micromanage their operation to the point where the performance of their mission is hampered. Generally, they feel that too many reports of too great detail are required, little explanation is given as to the necessity of these reports, and little or no feedback is provided regarding the usefulness of the information provided. For example, NAVSEAINST 4850.4 requires that the shipyard check on worker activity, report the percentage of workers who are not active, and describe what these workers are doing (e.g., discussing hockey, looking out a window). NAVSHIPS letter 052, dated 27 Feb 1973, provides detailed guidelines for use by the shipyard in controlling the use of temporary waterfront shacks by supervisors. NAVSEA requires a quarterly report on the number of existing shacks. It appears that local management should be able to handle the above problem areas without assistance from the SYSCOM.

At NSCs, all costs, primarily labor, are charged to one of nearly 150 cost accounts. NAVSUP sets validated productivity rates (PRs) for each of these accounts, based on such factors as the number of employees, workload, plant or warehouse layout, and historical production rates. Each month, the actual PRs for each of the cost accounts are computed ($PR = \text{Daily average work unit/daily average man-hours}$) and compared with the NAVSUP validated PRs. If any cost account fluctuates in its actual PR more than 10 percent in either direction from NAVSUP's validated PR, NAVSUP requires a written explanation (variance report) of why this has happened.

NSCs see the monthly variance reports as unnecessary for two reasons: First, most of the fluctuations across months are due to the naturally fluctuating workload, leave usage, new hires, retirements, etc. Second, since NSCs submit a quarterly review and a mid-year budget review to NAVSUP, it is questionable whether a monthly review contributes any real additional information to the monitoring process.

When the variance report was discussed with representatives in NAVSUP, they defended it very strongly, pointing out that this report is one of the primary tools used by Functional Managers (NAVSUP representatives who monitor the NSCs' cost accounts) to keep in touch with conditions related to their cost accounts at the local activities. Also, they reported that PRs are monitored closely so that additional resources can be provided if the situation at the local activity looks like it is getting out of control. The variance report apparently is also used in the budget process, to brief the SYSCOM concerning conditions in the field, and as a link with the Navy-wide effort to increase productivity in all of its activities. Apparently, although the field activities feel that the variance report is an example of micromanagement, it is used by NAVSUP in making many high level decisions and assessments.

Finally, the weapons station provided NAVPERSRANDCEN with information on numerous and excessive inspections and audits. This was seen as another example of

micromanagement, since many of the required inspections were redundant and information from one inspection was seldom used by individuals performing different but related inspections.

In an attempt to reduce micromanagement, the cost in man-hours of filling all external requests for information should be determined, and this cost data reviewed periodically by the SYSCOMs and other headquarter activities. Also, whenever possible, the net benefits and costs of a new management action should be determined or estimated before that action is implemented.

Coordination of Instructions

Procedures at field activities are not only controlled by activities higher in the chain of command but also by activities outside of it. To avoid conflicting requirements, instructions or information on the same topic--but from different sources--should be coordinated.

For example, at PWC, OP-45 directives on energy conservation require that hot water be shut off, while an Occupational Safety and Health Act (OSHA) regulation says that hot water is required for health reasons. Further, the energy conservation directives regarding lighting conflict with OSHA minimum required lighting levels. It appears that the DoD Energy, Environment, and Safety office should be responsible for preventing such conflicts.

Another example of conflicting regulations concerns the shipment of household goods (HHG), which is controlled by Joint Travel Regulations (JTRs) issued by Congress. Unfortunately, it appears that the various services have interpreted those portions of the JTRs that are open to interpretation somewhat differently. The shipment of motorized two-wheeled vehicles serves as a specific case. Navy regulations permit shipment of motorcycles, mopeds, and dirt-bikes with an engine displacement less than 50cc or other motorized bikes with a maximum speed less than 25 MPH; and Air Force regulations, shipment of any motorized bike with an engine displacement less than 100cc. The Army uses wheel diameter to determine eligibility for shipment, while the Marine Corps allows shipment of any motorized bike used strictly for recreational purposes. NAVSUP has indicated that a Personal Property Coordinating Council (PPCC), consisting of representatives from each service branch, meets regularly to discuss JTR interpretations. However, the field activities do not have direct input to the PPCC.

Regulations on the same subject from different governmental organizations often are enacted before the impact of those regulations on field activities has been determined. Although many of these organizations are above NAVMAT in the management hierarchy, a procedure should be set up within NAVMAT so that field activities can report conflicting regulations and have them examined at the NAVMAT level.

Local Authority for Expenditures

Field activities are granted local buying authority for various types of expenditures, such as purchases of material or equipment outside the normal supply system, within the previously mentioned DAR limits for the acquisition of material or services. Any purchase or action exceeding set levels must be approved above the field activity level.

Maintenance of Real Property. A problem frequently mentioned in this regard was associated with the local maintenance of real property. Although OPNAV has approved a \$50,000 field activity spending limit for minor construction and maintenance projects, the

limitations actually imposed on local activities are usually much less than this amount. For example, NAVSEA has limited its field activities to \$25,000. In response to Admiral Rickover's concern that unnecessary cosmetic improvements were being made, some field activities have been restricted to \$15,000 (NAVSEAINST 7045.1A).

At NAVSUP activities, any Maintenance of Real Property (MRP) project over \$2500 must be approved in the budget. NAVSUP's program for MRP projects is controlled by the Command Integrated Maintenance Control System, which was designed to allocate "limited NAVSUP facilities maintenance funds to those requirements having the greatest impact on the NAVSUP mission (NAVSUPINST 11010.7 of 12 May 1978)." When contacted regarding this problem, NAVSUP stated that management of MRP projects and funds is a SYSCOM function and not a field level function. Further, NAVSUP expressed concern that activities might misuse funds if this level of control was not maintained. NAVSUP did concede, however, that the current funding level was somewhat arbitrary (it was increased from \$1500 to \$2500 in May 1980), and indicated a willingness to increase the figure to \$3000.

SYSCOMs should review current local authority limits to determine where increases could be made that could result in increased productivity at the activity level. Also, all current buying authority levels at field activities should be reappraised to make them compatible with present inflationary conditions.

Local Purchasing Limits. Several field activities cited problems with dollar limits when expending their own funds for such purchases as industrial equipment. Purchases exceeding a fixed dollar limit have to be made either through the contracts office in a supply center or at a regional contract office. The dollar limits for all NAVMAT activities are set by NAVSUP. Field activities often reported that they felt these limits were too low, resulting in an unnecessarily complex process and a significant loss in time. It was recommended that NAVSUP reevaluate these purchasing limits and consider increasing them when appropriate.

Appropriations/Budget Process

Field activity representatives frequently mentioned that the general process of securing funds is a complex and often recurring problem. Specific difficulties mentioned ranged from problems in securing funds for a particular piece of equipment to operating for several months at the beginning of each fiscal year with only vague information concerning the yearly budget.

Acquisition delays. Even when funds are available to purchase new equipment, there are often excessive delays in the acquisition process, which is viewed as consisting of at least three distinct parts: (1) justification for and request of equipment, (2) obtaining funding approval, and (3) purchasing the equipment. Delays in the second step can occur because (1) local departments cannot determine the appropriate funding request format, (2) the SYSCOM may not have the authority to grant the request, or (3) managerial levels above the SYSCOM take excessive time in approving the request. Delays in the third step of the process can occur because vendors have gone out of business.

Budgetary Feedback. Activities raised problems related to delayed budgetary feedback from the SYSCOMs and to the cumbersome and complex budget process itself. The shipyard stated that, when feedback on the status of pending fast payback projects is delayed, it is unable to obligate funds in the current fiscal year. The supply center stated that feedback from NAVSUP was typically delayed 3 to 4 months. In the interim, the supply activities must work with, at most, unofficial and vague information. In addition,

the supply activities are discouraged and hindered by the constant change in budget format from year to year. The changes implemented by NAVSUP for FY81 are expected to reduce the overall budget cycle by 2 months. Since standardization is not expected in the near future, it is recommended that the impact of proposed changes at both the SYSCOM and field levels be examined objectively before they are implemented, considering time, effort, and dollars required to make the changes. In addition, the SYSCOMs must be made more aware of the need for accurate and timely information in the field.

Shelf-life Program

Representatives reported that too many items are shelf-life controlled. The DoD Shelf-Life Item Management Manual (DoD 4120.27-M), and NAVSUP Instruction 4410.43A define a shelf-life item as one "with known or suspected critical deterioration characteristics." Any item that displays these characteristics within the first 60 months after manufacture, curing, assembly, etc. is shelf-life controlled. Although such items as medical supplies and aircraft sealants may fit this definition and can justifiably be classified as shelf-life controlled, those in the field believe that such items as office supplies, shirts, trousers, mattresses, and house and office paint are included in the shelf-life system solely for the purpose of stock rotation.

At NSC San Diego, approximately 5,000 Navy stock-numbered items, about one third of the total number in the supply system, are included in the shelf-life program. Three people are employed full-time to manage the program. In addition to labor costs, the program involves costs in surveying an item because of its age and in testing an extendable shelf-life item, as well as special storage problems.

The designation of shelf life is the responsibility of the Inventory Control Point (ICP) where the item originates. These ICPs include the Ships Parts Control Center (SPCC), the Aviation Supply Office (ASO), the Defense Logistics Agency (DLA), and the General Services Administration (GSA). The ICPs are responsible for conducting periodic reviews of their shelf-life programs; and the local activities, for supplying the ICPs with information concerning the correctness of the shelf life of items in the program. However, persons contacted at the ICPs stated that, to their recollection, ICP shelf-life reviews had not been conducted and that information from the field was infrequent. In this regard, SPCC is planning to develop detailed files describing all characteristics of shelf-life controlled items in an effort to keep the number of such items to a minimum. Also, SPCC, DLA, and GSA are planning to begin reviews of their shelf-life programs during FY81.

Several problems associated with shelf life were directly linked to the GSA. First, many of the items given as examples of items unnecessarily included in the shelf-life program are from GSA. Also, GSA issues everything on a first-in-first-out basis, and can and will issue any item with any amount of shelf life left.

The Air Force completely disregards shelf life on several classes of GSA items; most notably, GSA office furniture and supplies. Its criterion for shelf-life designation is radically different from all others involved in any shelf-life program. As far as the Air Force is concerned, an item is shelf-life controlled only if it has a demonstrated critical in-use failure that can be related to its age. As a result, the Air Force has only 1200 shelf-life items, compared to over 16,000 for the Navy. Although the cost/benefit rates of the Air Force's program have not yet been analyzed, some information regarding its effectiveness may be available in a future Defense Logistics Audit Service study on ICP disposal and inspection survey rates across services. This study will commence in early FY81.

To address this problem, it is recommended that field activities be surveyed to identify items that have such a quick turnaround that shelf life becomes irrelevant or have a shorter designated shelf life than appears necessary. Identified items should be evaluated at their respective ICP for criticality, and those seen as noncritical removed from the shelf-life program at a single location on a trial basis. During the trial period, the costs and benefits of including the item in the shelf-life program should be evaluated, and results used to determine whether the item could be eliminated from the program at all locations. Also, the importance of a feedback loop between the ICPs and local activities as a means for fine-tuning the program and eliminating unnecessary items should be emphasized. Finally, since many of the items coming from the field survey are GSA items and GSA refuses to act on the information provided, it is recommended that the Navy consider actions similar to those initiated by the Air Force.

Work Attitudes

All participating field activities noted that negative work attitudes affected productivity to some degree. Reasons for negative attitudes toward work included perceptions of being disparaged as a government employee, low pay relative to the private sector, low organizational morale, and frustration with government red tape.

In many instances, employees attributed negative attitudes to the impediments previously discussed. In other words, employees are tired of encountering the same obstacles over and over again, especially when they see no efforts being made to remove the obstacles.

Lack of Work Coordination

Personnel in all five field activities reported a lack of coordination in work efforts. Comments included a lack of team effort across departments, poor planning, and a lack of coordination between interdependent trades. Although part of this problem is inherent in the functioning of any large organization, some of it is a function of organizational structure and/or geographic dispersion.

Planning and Estimating/Production Standards

The shipyard, the NARF, and the PWC reported a number of problems concerning the generation of production standards. First, there are several ways of generating standards, ranging from using data gained from such sources as first-hand observation and historical records to having standards set by other sources (e.g., manufacturers). The "tightness" of the standard can depend upon how it was derived. Engineered standards may be tight but may not compensate for recent equipment alterations or lack of technical training. Likewise, "looser" standards based only on recent observations may represent the cutting edge with regard to production standards for newer or obsolete equipment. The problem is that workers do not always accept standards as valid; in such cases, the standards are seen as unfair expectations rather than as achievable goals.

A second problem concerns the lack of experienced personnel involved in planning and estimating. It is very difficult for these employees to visit each area, report back, and develop a set of standards in a timely manner, particularly at larger activities that are geographically dispersed. Compounding this problem is a lack of communication between the planners and estimators and personnel in other departments. This results in a lack of trust between production and planning personnel and an adversarial rather than a cooperative relationship.

Pay/Position Management Issues

Pay Inversion and Pay Comparability. During the past few years, the pay of General Schedule (GS) federal employees has not been comparable with that of the private sector. This fact, coupled with high inflation, has caused managers and supervisors to try to raise grade levels. Since supervisors want to retain good employees and attract high quality applicants for vacant positions, they attempt to use the position classification system to correct the pay problem. The situation is further complicated by the existence of a different set of laws for paying federal Wage Grade (WG) employees. Whereas GS pay is determined on a nationwide basis, WG employees' pay is based on wages paid in the local area for similar kinds of work. In general, over the past several years, WG employees have been receiving comparability increases that are much higher than those received by GS employees. This situation has resulted in employees leaving or not applying for GS positions. Three major effects of this situation are described below:

1. The relationship between personnel office classification specialists and managers, supervisors, and employees has greatly deteriorated. Classification specialists are supposed to classify positions based solely on the classification standards. Managers and supervisors see many of these standards as being vague, obsolete, and subject to too much interpretation by classifiers. The issuance of OPM's Factor Evaluation System standards apparently has not improved managers' understanding and acceptance of the present classification system.

2. Supervisors at the participating activities noted a decrease in the quality of candidates applying for GS positions. It follows then that candidates selected are less productive, which means that their work quality is reduced and more time must be spent in training them. As a result, special pay rates are being requested more frequently to attract and retain persons for GS positions that are adversely affected by pay inversion.

3. Costly position management practices are being used in an effort to raise grade levels. For example, higher level duties that could support one higher graded position are fragmented among two or more positions so additional high grade positions can be established. Also, the practice of "overwriting" position descriptions to reflect higher level duties (which may or may not be performed) as a means to raise grades appears to be increasing. Classifiers who are tired of the adversarial relationship with supervisors state that they will classify positions at a higher grade if the position description reflects higher level duties, even though they know the duties do not exist or will not be performed.

OPM is aware of this problem, and has introduced pay reform legislation into Congress.

Position Classification and Management's Needs. Managers and supervisors feel that the position classification system has failed to respond to management's needs. They feel that the grade levels of many positions must be raised to retain good employees in key positions, attract high quality candidates to fill vacancies, and to compensate employees for years when they received less than full pay comparability adjustments. When managers and supervisors attempt to raise grade levels by rewriting position descriptions, however, they usually do not succeed, because position classifiers do not agree that the revised duties justify a higher grade. Classifiers base their decisions on their interpretation of classification standards, while managers are more interested in raising grade/pay levels, regardless of what the classification system decides. Managers view the present classification system as arbitrary, unnecessarily complex, time consuming, and a paper-work nightmare (particularly the rewriting of position descriptions in Factor Evaluation

System format). This situation is resulting in lower morale, increased turnover, negative impacts on mission accomplishment, and less cooperation between line managers and the civilian personnel staff, particularly classifiers. In extreme cases, classifiers have spent as much as 160 hours of their own time trying to resolve a single grade level dispute with a supervisor. In an attempt to alleviate this situation, OPM is reviewing or planning to review certain standards characterized by managers as being obsolete and impossible to apply to today's jobs.

Executives who attended the Second Annual OPM Management Conference in February 1980 stated that they consider the position classification system as a major obstacle to effective personnel management. The extent of the criticism prompted OPM to organize a major review of the position classification system, covering everything from the production of standards to the question of whether a new classification system is needed. This review process has begun at the OPM Central Office level. Also, new approaches in classifying positions have started on an experimental basis at the Naval Ocean Systems Center, San Diego and the Naval Weapons Center, China Lake, CA. It is recommended that NAVMAT begin a program designed to revise outdated and ambiguous classification standards and provide increased training of classifiers. Such training should emphasize the need to facilitate management's staffing goals.

Position management. The federal government's policy, as expressed in Chapter 312 of the Federal Personnel Manual and in various Department of the Navy instructions, is to structure positions and organizations so as to provide the maximum attainable efficiency and economy in support of an organization's mission. Managers and supervisors at all levels are held responsible and accountable not only for organizing work but also for practicing good position management. However, interviews with managers, supervisors, and personnelists indicate that the "reward" for practicing good position management could be a reduction in staff and lower grades for employees and supervisors. Thus, position management is seen as a negative program that is forced on line managers and supervisors by the personnel staff, particularly position classification specialists.

Contrary to good position management procedures, supervisors, in an attempt to raise grade levels to keep up with the inflation rate, frequently fragment high level duties among several positions, fill positions at the highest level possible, certify that a position is essential and needed when it is not, and/or maintain or establish inefficient and costly organization structures. Efforts by management analysts, personnel specialists, and other staff personnel to correct or stop these poor position management procedures frequently create a negative relationship between staff and line officials. Staff officials see themselves as carrying out their assigned program responsibilities, while line managers tend to view the position management staff as an obstruction in their attempts to manage the workforce and accomplish the organization's mission. Some line managers have abdicated their position management responsibilities because they feel that the position management staff, and not the line managers, have the power to dictate how organizations and positions will be structured.

The DoN position management program has recently been revised to include the following features, which are essential to a sound position management program:

1. The development of normative data and grade conservation guidelines for evaluating position management effectiveness of both military and civilian supervisors and managers.
2. The development of control systems to identify, control, and eliminate ineffective position management practices.

3. The use of formal program management, inspections, and audits for evaluating position management effectiveness in integrated civilian-military organizational units.

Although increased controls and requirements may improve overall position management effectiveness, more attention should be given to developing incentives to practice good position management. Monetary or other rewards should be given to persons who demonstrate their effectiveness in carrying out their position management responsibilities. This may help to change the perception that there are no rewards for practicing good position management.

Staffing Issues

Timeliness in Staffing Positions. Although managers at most of the participating activities mentioned timeliness in filling positions as an impediment to productivity, the degree of concern over this problem varied from activity to activity. The cases that were cited as examples of long delays usually involved positions for which there are few qualified available applicants, such as higher grade analyst positions and jobs in shortage categories such as mechanics, pipefitters, and boilermakers. Long delays in filling these kinds of positions are difficult to avoid because there are not enough qualified persons available in the general workforce.

To address this problem, activities are conducting studies to determine where delays are occurring. At the headquarters level, the Assistant Deputy Chief of Naval Operations, Civilian Personnel Division (OP-14) and the Naval Civilian Personnel Command (NCPC) have identified the need to improve the timeliness of services, including the timeliness of staffing positions, as one of their 1980-1981 organizational objectives. It is recommended that this be made a top priority item for NCPC.

Duplication in the Development of Merit Promotion Crediting Plans. Chapter 335 of the Federal Personnel Manual and the Navy's Civilian Personnel Instruction 335 provide policy on the operation of the Merit Staffing Program. In any merit promotion program, candidates must be evaluated, based on predetermined criteria, to establish their relative merit for promotion to the position being filled.

At present, each Navy activity that evaluates candidates develops a crediting plan to meet the above criteria. This is a very time-consuming process for supervisors, who assist in identifying evaluation factors, and personnelists, who develop the final evaluation factors that are combined to make a crediting plan. Also, a considerable amount of duplication of effort results, particularly in regard to the more common occupations, such as those in clerical, technical, and WG areas. Personnelists at the activity level and representatives from NAVMAT, OP-14 and OPM all agreed that there is unnecessary duplication of efforts in the development of crediting plans.

A Crediting Plan Manual, which has been issued by NCPC, describes procedures for establishing valid, job-related crediting plans. After staffing officers at NCPC field divisions have received initial training, they will be asked to coordinate efforts to develop model crediting plans for the Navy's 20 most populous occupations. Eventually, if enough expertise is built up, the Navy may establish a crediting plan bank. A standardized crediting plan has already been developed for production controllers.

NCPC and NAVMAT have expressed interest in and pledge cooperation with efforts the OPM Western Region may undertake to streamline the process for developing crediting plans. The OPM Western Region has considerable experience in the development of crediting plans, and it has expressed interest in exploring ways to produce validated

crediting plans with a minimum expenditure of resources. Success of such an effort will significantly reduce the amount of time spent developing crediting plans. This should not only provide the personnel staff with more time to spend on other duties, but also reduce the amount of time needed to fill positions through the merit program system.

Hiring of Student Aides for Career-conditional Appointments. In 1965, the government began a stay-in-school program to encourage youths to continue or resume their education. As part of the program, agencies were to provide part-time jobs to disadvantaged youths so that they would not have to drop out of school. To facilitate such employment, OPM approved a special appointing authority (Schedule A 213.3102 (w)) that permitted agencies to appoint persons who met certain eligibility criteria to part-time or intermittent positions involving work of a routine nature. In any given year, industrial activities usually hire from 5 to 20 student aides. Although many of these student aides have turned out to be very productive workers, there is no provision in the program or appointing authority for converting intermittent positions to career-conditional positions. Moreover, when supervisors try to hire student aides for career-conditional positions, they are frequently unsuccessful because employment registers are closed or the aides are not within reach on the register. The inability to hire these productive workers is viewed as an impediment to increasing productivity.

Representatives from various Navy headquarters' offices, including NAVMAT and CNO (OP-14), supported the proposal of modifying the special appointing authority to allow for noncompetitive conversion of student aide positions to career-conditional positions. OPM Western Region will study this proposal, and recommend changes if it is considered practical.

Title 5/Fair Labor Standards Act (FLSA)--Overtime Differences. Supervisors and personnelists, particularly those at the larger industrial organizations (NARF North Island and the Pearl Harbor NAVSHIPYD), reported that the difference in the overtime provisions of Title 5, U.S. Code, and the Fair Labor Standards Act (FLSA) is causing morale problems, which, in turn, adversely affect productivity.

WG employees and GS employees who are not exempted from FLSA are covered by two laws, FLSA and Title 5, U.S. Code, for overtime purposes. They are paid one and one-half times their base rate of pay, regardless of the amount they earn. GS employees who are exempted from FLSA are covered only by Title 5 for overtime purposes. They are paid no more than one and one-half times the hourly rate of GS-10 step 1 (\$13.53). For example, suppose that GS-13, GS-12, GS-10, and WG-10 employees are working overtime side by side on the same project. The GS-12 and GS-13 employees are covered only by Title 5 and are limited to the overtime rate of \$13.53 per hour, while the FLSA nonexempt GS-10 and WS-10 employees would receive approximately \$14.86 and \$15.00 per hour, respectively. This pay disparity reduces the incentive for the GS-12s and GS-13s to be productive.

Continuation of Pay (COP)--Traumatic Injury. The Federal Employees' Compensation Act (5 U.S. Code 8101) provides compensation and medical care for all government employees for disability due to personal injuries sustained while in the performance of duty. Provisions of the act state that "an employee who sustains a disabling, job-related traumatic injury is entitled to continuation of regular pay for a period not to exceed 45 days." Normally, the regular pay of an injured or disabled employee continues until: (1) the agency is notified by the attending physician that the employee is no longer disabled, (2) the agency is notified by the Office of Workers' Compensation Programs (OWCP), Department of Labor, that pay should be terminated, or (3) 45 calendar days have expired.

Supervisors at the activities participating in the study reported that abuse of the "Continuation of Pay (COP)--Traumatic Injury" provisions is increasing costs and reducing productivity. The figures cited by three of the field activities as the approximate amount paid out per year for traumatic injury cases were \$120,000, \$218,000, and \$458,000.

Managers and safety specialists feel that some employees are taking advantage of the COP provisions by claiming that minor injuries are so serious that they must remain off work for several days or weeks. Injured employees are allowed to choose a private physician to verify the seriousness of the injury. According to some supervisors, certain doctors will routinely certify that an employee cannot return to work for long periods of time without thoroughly examining the injury. Proving fraud or abuse is extremely difficult. Although activities may contest the payment of claims, their success rate is low for the cases that have been challenged. For example, in FY79, only 22 percent of COP claims challenged by the Pearl Harbor NAVSHIPYD were upheld by the OWCP.

Although all activities are attempting to monitor and control this problem, the Department of Labor should conduct a study to verify the existence of abuses perceived as being prevalent in the present system. The results should be used to modify the current law governing the program.

National Agency Check and Inquiry. Executive Order 10450, issued in 1953, states that persons employed by any government department or agency shall be subject to investigation. This investigation shall include no less than a National Agency Check and Inquiry (NACI) (including a check of the fingerprint files maintained by the Federal Bureau of Investigation (FBI)) and written inquiries to appropriate local law enforcement agencies, former employers and supervisors, references, and officials of schools attended by the person being investigated. For persons selected to positions designated as "sensitive," investigations must be completed before they are appointed to the position.

Field activity representatives identified delays in processing NACI requests as a definite problem. Representatives of NAVMAT, CNO, and NAVSEA SYSCOM agreed that the problem existed, particularly at shipyards dealing with nuclear ships and submarines.

During FY 1979, the Pearl Harbor NAVSHIPYD submitted 814 NACI requests to OPM for processing. As of 1 March 1980, only 454 of these requests had been processed. A few have been pending for approximately 1 year. Although OPM's goal is to complete action on the cases in less than 60 days, the shipyard stated that only 17 percent of its requests are processed within that time frame.

Other shipyards face similar delays. NAVSEA, in a July 1980 letter to NCPC concerning the time required to complete NACIs, noted that the majority of inquiries were delayed at least 60-90 days, with a substantial number exceeding 120 days. NAVWPNSTA Concord reported that, in a 12-month period ending June 1980, they had submitted 170 NACI requests and that the average time taken to process NACIs was about 105 days, with a few cases taking over a year. NSC San Diego stated that the average processing time for their NACIs is about 4 months. Pearl Harbor NAVSHIPYD and Concord NAVWPNSTA noted that there has been only one or two instances in the past year where a person has been removed or not hired because of NACI information.

Delays in NACI processing have a serious impact on field activities. Persons in highly skilled shortage category occupations (e.g., engineers) are unwilling to wait months for NACIs to be completed. The time, effort, and money spent recruiting and screening these applicants are wasted if they cannot be employed as quickly as possible. NAVSEA has noted that clearance delays can affect a shipyard's ability to meet ship availability

completion dates because new personnel cannot be hired and used productively in a timely manner.

The Director of Personnel Investigations, OPM, is aware of the problem and why it exists. All NACI requests are sent to the OPM NACI Processing Center in Boyers, PA. The center acts on requests within a few days by sending out inquiries to the appropriate persons and federal agencies. Cases are closed out and forwarded to appropriate Navy activities when information is returned from key information sources, such as the FBI. Unfortunately, the process is delayed at the FBI, since it takes from 45 to 60 days to screen and classify fingerprints because of understaffing in the FBI classifying unit. Longer delays are encountered if the fingerprints cannot be classified, which means that a new set must be submitted. To reduce such delays, OPM is training personnel at the NACI Center to identify fingerprints that are clearly not classifiable and return them to the activity for resubmission of new prints.

For applicants with prior military service, who account for 50 to 60 percent of all NACI requests submitted by Navy activities, DoD's Defense Central Investigations Index (DCII) must be checked. However, for about half of the cases, the records are not immediately available for review because they are filed or being used elsewhere. It may take from 60 to 80 days to obtain them. To resolve this problem, OPM, in March 1980, began using a computer terminal that gives OPM direct access to the DCII. Although this has resulted in some improvement in processing time, OPM has still not achieved its timeliness goals.

Delays in NACI processing are also caused by the Navy's policy concerning applicants for sensitive positions. In such cases, completed NACI requests that contain any derogatory information are forwarded to NCPC's Personnel Security Program Office for review before they are forwarded to the appropriate field activity. This office, which reviews about 10 percent of the Navy's NACI requests, determines whether a person should be cleared and assures that clearance eligibility criteria are consistently applied. Although this office, which has been in operation since 1967, has not denied any clearances, it has advised the employing activity to seek additional information in cases where serious derogatory information has been found. It may recommend that a person be found "not eligible" for a clearance, but final authority to grant or deny a clearance has been delegated to the heads of activities. Although the head of the NCPC Personnel Security Program Office estimated that NACI cases reviewed are sent to activities 1 week after they are received, correspondence from the Norfolk NAVSHIPYD to the NAVSEA SYSCOM suggests that the review process may take 3 weeks or longer. The head of the Personnel Security Program Office stated that, in the future, NCPC will probably be given the authority to deny clearances rather than just recommend that a person be found ineligible.

In an effort to reduce the delay in NACI processing, Navy personnel security specialists from NAVMAT, NAVSEA, and NCPC met in September 1980 with top OPM personnel investigations specialists to examine and discuss the entire NACI processing system. OPM and Navy agreed to review their respective NACI processing actions to avoid current delays. It is recommended that NAVMAT continue to emphasize the importance of correcting this problem.

Supervisory Appraisal for Promotion. The supervisor's appraisal of employee performance is used to evaluate candidates for positions filled through merit staffing procedures. The performance appraisal, which usually covers several aspects that are related to the knowledges, skills, abilities, and personal characteristics of the position being filled, is required by Chapter 335 of the Federal Personnel Manual and by the

Department of the Navy Civilian Personnel Instruction 335. One or more performance appraisals must be submitted by present and/or former supervisors for all qualified applicants who apply for positions announced under an activity Merit Promotion Plan.

Supervisors noted that the usefulness of the current method of obtaining these performance appraisals was questionable, admitting that they do not give accurate appraisals of employee performance or potential for two primary reasons. First, they fear that appraisals that indicate that the employee is performing at satisfactory or lower levels will result in employees filing grievances or EEO complaints. In the past, when appraisals were not generally available to employees, supervisors stated that they gave more objective and accurate appraisals. Now that appraisals are not only available to the employees but are also usually discussed with them before being forwarded to the personnel office, supervisors do not want to explain or defend appraisals that employees believe are too low. Second, supervisors do not give objective appraisals because they want their employees to be competitive with those from other units. As a result, they rate almost all employees at the high end of the scale.

To determine whether the comments made by supervisors and personnelists were valid, a random sample (N = 298) of supervisor performance appraisals submitted at the PWC and the NSC was analyzed. These appraisals contained a total of 1,886 ratings, with the number of ratings included in each appraisal ranging from 4 to 9. These ratings were made on a 4-point scale, where 4 = superior or outstanding, 3 = above average, 2 = average or satisfactory, and 1 = marginal or unsatisfactory.

Results of the analysis showed that 1,689 of the 1,886 ratings (89.5%) were made at the 3- or 4-point level. Most supervisors stated that they would not give more objective evaluations as long as employees had access to the information. Additional discussions with supervisors and personnelists revealed that candidates are being evaluated in another way, which is viewed as being more objective and accurate than the formal appraisal. In many instances, selecting officials telephone the present and former supervisors of the persons who are being considered to inquire about a candidate's performance. Selecting officials feel that these informal contacts are more effective in measuring performance than are formal written appraisals.

Navy headquarters officials and OPM representatives at the central office level agreed that the practice of using supervisory appraisals for evaluating position candidates, both within the Navy and government-wide, should be investigated. The annual cost in time and dollars for completing, mailing, and receiving these appraisals is very high. In addition, delays in receiving appraisals from supervisors increase the amount of time needed to fill vacancies.

A study should be conducted of this situation to identify and test alternate ways for obtaining objective information on candidates' abilities and potential. The Western Region OPM has indicated interest in performing such a study.

Employment Restrictions

Employment Ceiling. Activity managers and personnelists expressed concern and frustration over the present system for determining and controlling employment. Employment ceilings, which are determined by the President via Congress and administered by the Office of Management and Budget, are established for the total number of full-time permanent employees. However, since the passage of the Federal Part-time Career Employment Act in 1978 (Public Law 95-437), part-time employees have been included in employment ceilings, based on the fractional part of the 40-hour week worked.

Activity managers, particularly at Navy industrially funded (NIF) organizations, are convinced that the employment ceilings imposed on DoD activities are arbitrary, costly, and nonproductive. They reported that, although they are given the work and the money to do the work, they cannot hire enough people because of employment ceilings. For example, although the employment ceiling at the Pearl Harbor NAVSHIPYD is around 5,850, it was estimated that the shipyard has enough work for about 6,500 full-time employees and enough money for about 6,300. Situations such as this may result in high use of overtime, hiring temporary employees (who are considered less productive), contracting out at higher costs, and delays in accomplishing work. Numerous studies and reports have been made on how ceiling constraints impact on the efficiency of government operations.

This issue is closely related to another problem--that of contracting out. Under ceiling controls, industrial activities are forced to contract some proportion of the work out, regardless of whether they could do the work more effectively or efficiently in-house. Numerous complaints were made in this regard. For instance, considerable in-house cost is associated with negotiating and monitoring these contracts. In addition, there are insufficient controls over contractor performance; if a contractor's work is unsatisfactory, there is little recourse. This situation is not only costly to the government, but has negative effects on the morale of in-house employees.

Although legislation to reduce or eliminate ceiling controls for industrially funded organizations has been introduced in the Congress in the last 2 years, it has not been approved. Therefore, it is recommended that steps be taken to reduce the impact of ceiling controls, either by removing them from industrial activities or by stabilizing them to allow for more accurate planning.

Releasing and Rehiring of Temporary Employees. In many instances, temporary employees are hired to circumvent ceiling restrictions on the total number of full-time permanent employees. Under present regulations, an activity must not exceed a given total full-time permanent employment ceiling at the end of the fiscal year. Since additional employees are needed, temporary employees are hired to fill full-time permanent positions and are released right before the end of the fiscal year. Subsequently, those who are still interested and available for employment at the beginning of the new fiscal year are rehired on temporary appointments. The required paperwork to release and rehire temporary employees takes considerable time on the part of both line management and the personnel office. For example, the PWC estimated that, during FY79, there were approximately 900 separations, including approximately 500 temporary employees who were released toward the end of the fiscal year to meet employment ceilings. Pearl Harbor NAVSHIPYD estimated that approximately 450 temporary employees are released at the end of the fiscal year. The amount of time and paperwork required to process these actions is viewed as being nonproductive by personnel offices. In addition, the personnel office at PWC estimated that supervisors spend up to 40 hours per year per temporary employee trying to find ways to hire good temporary employees for permanent jobs when permanent ceiling points become vacant. Often, either these temporary employees (primarily WG) are not within reach for appointment on the OPM registers, or the registers are closed.

Technical/Managerial Training

Both supervisors and workers reported that training needs were not being met. Supervisors indicate that their managerial skills are not being developed because they are not receiving the necessary management classes, primarily because few training funds remain after requirements for training in such areas as EEO, drug and alcohol abuse, and

safety have been met. Technical training, for both supervisors and workers, has suffered for similar reasons. Even when funds are available, supervisors reported that they often cannot afford to send their people to training courses because of the loss of productive time on the job.

Other Personnel-Related Impediments

Supervisory Responsibilities. Supervisors often do not or cannot carry out their management duties because they have an excessive number of clerical and administrative duties, supervise too many employees, have few positive incentives for effective supervision, are rarely held accountable for their duties, possess limited authority, and/or are hampered by micromanagement from the top. Although supervisors do feel that genuine constraints are placed on their authority, it may be that they simply are not aware of the full scope of that authority or aggressive enough in executing it..

Performance Award Program Impediments. The effectiveness of the Performance Award Program is limited, primarily because of two factors. First, some supervisors are reluctant to recommend cash awards for deserving employees because of the documentation involved. In cases when award recommendations are returned by incentive awards committees or higher management levels because of insufficient information, supervisors either become discouraged and do not resubmit recommendations or spend additional time further justifying the award. This is particularly frustrating for supervisors who have limited writing ability.

Second, award recommendations submitted by a first-level supervisor usually must go through four or more review levels, including an incentive awards committee, before they are approved or disapproved. Since reviewing officials or committees usually are not familiar with an employee's performance, they may make their decision based on how well a recommendation is written rather than on how well an employee performs. The need for review by more than one or two levels above the originating level is questionable, since award recommendations approved at the next highest level are seldom disapproved, although additional written justification may be required. One of the participating activities uses a system requiring approval by only one or two levels above the originating level. The system appears to be operating effectively and it has reduced award processing time. Also, the shorter processing time serves to reinforce good performance because the reward is more closely associated in time to the performance that led to the award nomination.

Navy instructions on performance awards do not require the levels of review, the detailed award justification, or review of individual awards by committees that are required in most activity-level implementing instructions. It appears that activities are interpreting Navy performance award guidance very conservatively, resulting in the performance award program impediments described by supervisors. OPM encourages activities to delegate authority for approving performance awards to the lowest possible level, to eliminate committee review of individual award cases, and to minimize written justification needed to approve an award. Navy instructions must emphasize the flexibilities inherent in performance award programs, if their effectiveness is to be increased.

Increasing Workload/Program Requirements. Personnel office staffs expressed concern and frustration over the increasing workload and new program requirements being placed on them. Several personnelists stated that, as workload increases, their ability to respond to basic personnel office requirements, such as classifying and staffing positions, decreases. Specific program requirements that are putting heavy demands on personnel

staff members include rewriting positions in Factor Evaluation System format, operating under examining authorities delegated by OPM, carrying out responsibilities under the EEO Recruitment Program, reclassifying positions when new standards are issued, and implementing the changes resulting from the passage of the Civil Service Reform Act. Personnel staff members are expected to meet these requirements, as well as to improve the quality and timeliness of other personnel office services.

To address this problem, either the number of personnel staff members must be increased to handle the increased workload, or the personnel programs and regulations must be reexamined and streamlined to cut down on the number of steps and amount of paperwork required.

Proliferation of Instructions. Personnelists expressed concern over the proliferation and duplication of personnel instructions on the same subject. When instructions are issued by OPM, a chain reaction is created; that is, DoD issues guidance on the same subject to the Department of the Navy (DoN), which leads to the issuance of supplementary instructions from CNO, the SYSCOMs, and the field activities. Each level issuing supplemental instructions tends to add more controls and restrictions. As a result, policies that were originally relatively simple and flexible become very narrow and restrictive. For example, Chapter 35 of the Federal Personnel Manual, which describes the Merit Staffing Plan, is 7 pages long, and the Merit Staffing Plan developed by DoN is 46 pages long.

Several personnelists suggested that activities should be authorized to develop local implementing instructions based on the original instruction issued by OPM. They feel that the people who issue supplemental instructions at the Navy headquarters level do not understand or appreciate how these instructions affect the operating level. Different offices at the headquarters level prepare instructions on specific areas or programs, such as incentive awards, merit promotion, etc., and issue these instructions to the field for implementation. It is questionable whether anyone at the headquarters level realizes that all these instructions are funneled down and come together at the activity level. Although individual supplemental instructions may not be difficult to implement or follow, it is a different matter when a proliferation of such instructions must be implemented, particularly when they are inconsistent with one another.

Activity level personnelists recommend that cognizant Navy headquarters' organizations examine this matter so that a better balance can be achieved between the Navy's need for uniformity in its policies and the field activities' need for flexibility. Also, field activities should review their own personnel instructions to identify areas where needless constraints exist and then move to eliminate those constraints.

Impediments Unique to a Particular Type of Activity

Naval Weapons Station

Delayed Vendor Payment. Payments to vendors to NAVWPNSTA Concord have been delayed, sometimes for several months, because of the heavy workload at the Navy Regional Finance Center (NRFC). As a result, the vendors (predominantly small businesses) have given notice that they must either curtail services pending payment, withhold early payment discounts, or increase their rates to compensate for the delay.

To address this situation, which was described in a NAVWPNSTA letter to NAVCOMPT dated 2 June 1980, a representative of the Navy Accounting and Finance Center reported that the Navy Comptroller (NAVCOMPT) is implementing a new program called

Integrated Disbursing and Accounting (IDA). NAVWPNSTA should inquire about this program, which is aimed at creating efficient centralized payment functions at various NRFCs. It has been under development for some time and offers a response to a GAO report (1980c) on this problem.

NAVCOMPT recognizes that the Navy's industrially funded activities need to be able to pay their own bills. However, it is willing to allow activities to do so only if they can show that they have the required local expertise for handling these duties. Although there seems to be several impediments to creating new billets for these purposes, NAVSEA is pursuing the issue. NAVSEA and NAVWPNSTAs should cooperate to overcome these impediments so that required billets can be established.

Conflicting Ordnance Transportation Regulations. The Military Traffic Command (MTC) issues military management regulations, which provide guidelines to the services for shipment of ordnance materials. Unfortunately, revisions to MTC regulations are not always promptly incorporated into supplementary instructions issued by the services. For example, MTC revisions issued in 1979 have been incorporated into Army and Air Force supplementary instructions but not into Navy instructions. As a result, the NAVWPNSTA must use different shipping procedures, depending on whether Navy, Army, or Air Force ordnance is being shipped. Also, workers see a conflict between existing MTC regulations and Navy instructions.

The Navy will issue revised regulations as soon as OPNAVINST 5530.XX (Physical Security of Conventional Ammunition and Explosives) has been approved by OP-403 and OP-411. At the NAVSUP level, however, implementation may be delayed until funding for any new change requirements is guaranteed. It is recommended that NAVSEA clarify any potential misunderstanding concerning the use of existing instructions until the new regulations are formally approved.

Excessive Inspection/Audits. NAVWPNSTA reported that it must undergo an excessive number and variety of inspections and audits within a given period of time. When contacted about this issue, NAVSEA agreed that many inspections occur but said that it tries to coordinate those over which it has control. Unfortunately, many inspections originate outside NAVSEA and often outside DoD, thus making effective coordination difficult. It is recommended that NAVMAT and the SYSCOMs increase efforts to coordinate inspections and audits originating outside NAVSEA so as to minimize work interruption and to avoid gathering redundant information.

Restrictions on Changing Basic Workweek. Appendix A, Section A-3a to the Navy's Regulations for Establishing Workweeks and Work Schedules for GS and WG Employees (CMMI 610.S1A) states that an employee's basic workweek shall not be changed for a period of less than 3 consecutive weeks except under special circumstances. Field activities feel that this instruction limits management's flexibility to use the workforce effectively, since, in their opinion, it prohibits them from changing an employee's basic workweek for a period of less than 3 weeks even if the supervisor and the employee agree that such a change is appropriate. When this instruction was discussed with CNO (OP-14) representatives, no compelling reasons were given for continuing this limitation. OP-14 will conduct a systematic review of Navy policies and instructions to determine whether changes should be made or some instructions eliminated. Field organizations will have an opportunity to provide comments on proposed changes to or elimination of some instructions. At present, it appears that CMMI 610.SI-A should be revised to permit activities to change basic workweeks for a period of less than 3 consecutive weeks if agreeable to both the supervisor and employee.

Public Works Center

Safety Shoes. Implementation of DoD INST 6055.2, which states that the government must provide safety shoes to employees working in hazardous jobs, poses a problem, for the following reasons:

1. CMMI 594.1 1968 does not include safety shoes in its definition of a uniform. Thus, clothing allowances cannot be used to purchase shoes.
2. OPNAVINST 5100.14 states that no more than \$30.00 can be paid for shoes.
3. NAVMAT prohibits employees from supplementing the authorized amount of purchase.
4. Only a few stores will agree to stock safety shoes and accept government purchase orders.
5. \$30.00 will not buy high quality shoes. Although some employees would prefer to buy more expensive shoes and pay the difference, this is not allowed. If employees choose to buy more expensive shoes, they must pay the entire amount themselves.
6. The activity must determine whether shoes should be reissued or replaced, and returned shoes must be destroyed.

Currently, a mobile shoe store comes to PWC on a regular basis to fit employees with shoes. This procedure results in lost work time. Although NAVSUP is expected to be given responsibility for dispensing safety shoes, effective 1981, this will not solve the problems of dissatisfaction with the selection of shoes or the time currently being taken away from the job to purchase or exchange them.

NAVMAT and DoD representatives reported that DoD INST 1418.2 (Standards for Furnishing Uniforms or Paying Uniform Allowances to DoD Civilian Employees) is currently being revised, and that all services will be involved in the revision. The PWC Safety Officer is aware of the pending changes and he plans to suggest to the Navy's representative for uniforms that the definition of a uniform be redefined to include safety shoes. Employees could then receive the fixed allowance but could buy shoes wherever they wished and at any price they choose.

This issue exemplifies the way overlapping or conflicting policies can serve to impede effective implementation of an instruction. The time and paperwork required to operate such programs becomes burdensome. Existing and new policies in this area need to be coordinated and provisions made for allowing exceptions in special cases.

Housing. Better communication is needed between headquarters housing policy-makers and the offices implementing the policies. To illustrate, PWC San Diego received communications referencing a new draft of the housing manual (P930) that they had not yet received. The activity also indicated that, when directives concerning new policies or policy changes are being developed, field activities should be asked for their inputs.

When contacted about this situation, a NAVFAC housing department representative reported that the revised and updated housing manual had been mailed to field activities. He noted that upward/downward communication should improve owing to (1) Engineering Field Office (EFO) visits to activities to help solve problems, (2) participation in the new Navy Family Housing Management School, which provides a 2-week course on family

housing to employees, and (3) the distribution of a Navy family housing quarterly newsletter to all its activities. It is also anticipated that the standard operating procedure established in the new housing manual will be useful in clarifying Navy family housing operations.

Management Philosophy. It appears that the large backlog of planned work at PWC can be attributed, at least in part, to management's philosophy. NAVFAC sets a backlog target for specific work (i.e., work planned in advance) at 150 days, apparently because of the following reasons:

1. There is a fear that employees will run out of work.
2. Specific work requires that different trades do work at different times. Without a large backlog, persons in a certain trade may have nothing to do for a time.
3. The "end of FY dump" creates a work backlog, which is gradually reduced over the rest of the year.

It is recommended that NAVFAC modify the 150-day backlog philosophy so that greater emphasis can be placed on responsiveness to consumer needs rather than on the possibility of idle workers.

Naval Supply Center

Incoming Documents. NSC raised two related issues regarding supply requests from customers. First, problems were reported concerning the quality of request documents, including incomplete, missing, or insufficient information, as well as the use of outdated information. NSC estimates that (1) approximately 5 percent of the requests for standard stock items include errors, and (2) up to 20 percent of the requests for nonstandard items have problems that require follow-up. Second, problems result when supply center personnel attempt to fill in or correct the incomplete requests. The request forms, as now structured, do not include names or telephone numbers for points of contact. This is true of forms for both standard (form 1348) and nonstandard (forms 1348-6 and 1149) items. NSC personnel have only the name of the supply officer at the requesting activity or unit, who often did not originate the request and does not have complete information about it. Thus, when follow-ups are needed, NSC personnel must devote time to finding the number and name of the correct contact point.

There are several possible reasons for the above problems. For fleet customers, a storekeeper (SK) typically is responsible for completing and submitting supply request forms. Since one SK may submit 5000 requests for standard stock items in one year, the mere bulk of forms that must be completed is significant. Moreover, because of the high turnover rates in SK positions and in comparable civilian positions at shore activities, it is increasingly difficult to maintain a well trained, experienced staff to submit supply requests.

NSC's Customer Service Division is using monthly customer service board meetings, which are conducted for representatives of all fleet and shore customers, and the Customer Service Flash, a newsletter sent to all customers, to encourage customers to include points of contact and telephone numbers on all request documents. In addition to these methods, it is recommended that request documents be redesigned to require information on the customer point of contact.

Naval Air Rework Facility

Erroneous Production Standards/Performance and Reporting. Although this problem was covered in the previous section, it will be discussed here in greater detail because of the emphasis placed on it at NARF. Information obtained from both supervisors and workers indicated that problems with production standards occur when standards are perceived as being too tight or too loose. Foremen and journeymen were most concerned about standards that are too tight. Workers and foremen perceive standards as being too tight because of the following reasons:

1. Components and aircraft entering NARF for repair are in such poor condition that more time is required than previously estimated to make repairs.
2. Much of the shop equipment is obsolete and in poor condition.
3. Skill levels of production workers have declined, and NARF training programs have not been adequate to compensate for this decline.

Both workers and foremen perceive failure to meet production standards as unacceptable performance. Rather than report such failure, they take steps to evade the standard. These may include such practices as reporting jobs not actually performed and transferring time from an efficient worker to an inefficient worker.

Information obtained from interviews and questionnaires indicated that, if a standard is too loose, the worker frequently feels obligated to use all the available time. One worker reported that failure to use all the time provided by the standard is as offensive as failing to meet the standard. Apparently, peer pressure is the primary motivating force for using all time provided by a standard.

The NARF management has been unable to eliminate the practice of evading standards without increasing the number of support personnel and/or adversely affecting essential production functions. As indicated below, however, a program is underway to improve the accuracy of standards, including a reduction in the number of loose standards.

Poor implementation of standards at NARF has resulted in the following:

1. Management and cost data are distorted. To the extent that this distortion degrades management decision making, productivity is impeded.
2. If a standard is too loose, little effort is needed to meet it. Thus, the standard is no longer a goal and tends to lose any motivational value.
3. A great deal of effort is expended in maintaining, adjusting, and administering the standards. It is not uncommon, for example, for a worker to walk 200 feet or more to transact (record) into the MIS the starting and stopping of work on an item.

Programs implemented at NARF NORIS to reduce the severity of the standards problem include the following:

1. The ceiling for personnel in the Methods and Standards Division has recently been increased by approximately 25 percent.
2. A program is underway to increase the amount of work covered by standards. At present, almost 50 percent of the work performed by NARF is not covered by standards.

3. A study is being conducted by the Methods and Standards Division to develop better production work plans.

4. A new methods and standards technician training class has been approved for 20 personnel. The class will commence in early FY81.

A number of programs have been implemented at all NARFs to reduce the severity of the problems. These include:

1. Implementation of a NALC performance standards auditing program. The audit covers such factors as quantity and quality of standards, use of standards to load shops, transaction or reporting discipline, hand-written shop order abuse, and other factors.

2. Improvements in the Management Information System. Workload history is used to cross-check production standard reporting.

Before attempting to eliminate the practice of evading standards, NARFs should review current standards and related practices in order to:

1. Clarify the managerial benefits resulting from the existing system of standards. As far as the worker is concerned, there is little incentive for using and meeting the present standards.

2. Determine if system modifications are needed to improve compliance and to minimize time and effort involved in monitoring the system.

3. Determine if more efficient and cost-effective alternatives to the current system can be developed.

Excessive Administrative Duties Required of Foremen. The majority of NARF foremen held the opinion that extensive administrative duties limit the amount of time they can spend on the production floor, which, in turn, limits their availability for solving daily production problems. Administrative duties that must be performed are described below:

1. Some foremen reported making frequent trips from the shop to obtain missing parts so that production quotas can be met. Workers frequently do not perform this time-consuming duty because the foreman has greater "clout" in obtaining such parts.

2. Foremen in most shops reported keeping manually-recorded production logs as a backup for the computerized man-hour accounting system. Several felt it necessary to keep these logs as a defense against errors in the computer records.

3. Personnel record keeping, training paperwork, and career counseling tasks are performed in most shops by the foremen without assistance from clerical or professional personnel.

4. Foremen are also responsible for cost reduction, award paperwork, and processing of beneficial suggestions. The award paperwork represents a difficult and time-consuming task, especially for those foremen who have difficulty with writing. Preparing award paperwork so that it tells the story and is accepted by reviewing personnel is a formidable task that they are reluctant to undertake.

The foremen recognize that the above duties are a normal part of their supervisory functions. Their concern arises from a conviction that inadequate clerical and other

support is provided, and that there has been a significant increase in recent years in reporting requirements and other administrative duties.

A NARF study group has been formed to examine the workloads of production foremen and to identify any changes that are needed to improve their efficiency. In addition, a management Quality Circle has been formed to define the duties that should be performed by foremen. These efforts may not be enough. Continual pressure on NARF management to reduce overhead rates make it difficult to increase clerical support, even where studies suggest it is warranted. Given the increasing paperwork demands placed on foremen, perhaps a general reevaluation of current overhead guidelines is in order.

Naval Shipyard

Outdated Ship Configuration System Information. Consolidated Shipboard Allowance Lists (COSALs), a subset of the SPCC Master Ships Data File, are lists of parts aboard any given ship. Each part has a component identification (CID) number.

In the past, the Navy had frequent COSAL validation checks to ensure that the listed shipboard components still were on board and to update COSALs to reflect new components. Such validation checks are now less frequent, often too close to overhaul time to allow for timely ordering of parts, and are only 92-95 percent accurate.

A COSAL can contain over 20,000 component CIDs for a given ship and can be updated in at least four different ways:

1. The ship's supply officer sends COSAL change requests to SPCC when equipment changes are made during an operational period.
2. A SYSCOM can send a group of equipment specialists (i.e., a Tiger Team) out to a ship to make component changes while the ship is deployed, rather than wait for an overhaul. After the change, the ship's supply officer submits a COSAL change request.
3. A shipyard will submit COSAL changes for components that are replaced during an overhaul.
4. NAVSEA sends out a team of specialists to validate the COSALs approximately 12-14 months before an overhaul.

There are, in addition, other methods of updating COSAL information. SPCC sends out requests for COSAL updates 1 year prior to an overhaul. Based on the latest data set available, SPCC will send a Preliminary Equipment Configuration List (PECL), which SPCC believes is the most up-to-date list of components available, to the shipyard. Also, Supply Overhaul Assist Teams, who determine what parts should be carried on board to support a 90-day deployment, provide COSAL inputs. Despite, or perhaps because of, the many methods for validating COSALs, they seldom reflect, accurately, current on-board components.

Three times in the recent past, the Pearl Harbor NAVSHIPYD has had to allocate \$25,000 from its own overhead to send a team out to validate COSALs. This was necessary because nonvalidated COSALs can result in overbuying up to 25 percent, netting a loss of usable parts worth a quarter of a million dollars per overhaul. Also, the shipyard is faced with having to order parts at the last minute to repair equipment not listed on the COSALs.

The NAVSEA Planning Engineering Repairs and Alterations (PERA) group, which oversees the validation of COSALs, acknowledged the extent of the problem. They suggested that, although overall COSAL validation may be too costly, it could be less expensive and possibly just as useful to validate only Ship Alteration Repair Package (SARP) items (i.e., those items identified during a Preoverhaul Test and Inspection (POT&I) for repair or replacement). However, shipyard personnel indicated that SARP validation would occur too late in the preoverhaul phase to allow for timely ordering of parts.

It is recommended that NAVSEA assess the degree to which outdated COSALs are adversely impacting on the timely and efficient ordering of parts for overhauls. NAVSEA should determine whether it is more cost effective to use existing COSAL validating procedures or to have shipyards validate the COSALs.

Propeller Refurbishing Waivers. After the appropriate shipyard shop examines a ship or submarine propeller, the planners recommend either that certain repairs be made or that waivers be granted that override certain repair requirements. The latter action is taken if planners decide that necessary repairs would be too costly or that the specifications are close enough to tolerance to be considered acceptable.

The waiver requests are sent to NAVSEA 52F, which authorizes and funds the refurbishing of propellers, and a response is usually received within 2 weeks to 6 months after request submission (3 months is typical). (The authority for the granting of these waivers is found in NAVSEAINST 9245.1, March 1974.) If there are a number of waiver requests for a given propeller, NAVSEA 52F usually turns down about 50 percent of them.

After the waiver issue is settled or the propeller has been refurbished, the shipyard sends a Final Repair and Inspection Report to NAVSEA 52F and requests that the propeller be certified. This response again generally takes 3 months. The delays in making waiver decisions result from a heavy workload in NAVSEA 52F. Admiral Rickover has insisted that NAVSEA give clearance for all propulsion systems changes in submarines. Therefore, because of their involvement in nuclear work, the NAVSEA 52F engineers occasionally have cited Admiral Rickover's instruction to justify the waiver delays.

Although the demand for propeller refurbishing was set at 220 units per fiscal year, the total number of propellers refurbished annually since 1973 ranges from 114 to 176. Delays in processing waivers have contributed to this failure to meet production goals. To alleviate this problem and reduce lengthy delays, it was suggested that field activities be given the authority to grant their own waivers. NAVSEA 52F, when asked for comments on this issue, reported that NAVSEA had considered granting local waiver authority 2 years ago and rejected the idea because it felt that the field activities could not handle the responsibility, even though the necessary expertise may exist in the field. It was pointed out that 95 percent of Pearl Harbor's work deals with submarine propellers and that, in response to SUBPAC's complaint 5 years ago that these propellers were not being refurbished adequately, stringent specifications for submarine propellers were developed.

A NAVSEA representative noted that he would like to see the shipyard representatives meet to discuss this issue. He believes that waiver authority should be granted locally, at least for surface ships, since shipyards have the expertise to make waiver decisions. He also noted that the lack of shop-level experience, on the part of some NAVSEA engineers, may contribute to the delays in granting waivers. In this sense, there may be more expertise in this area at field activities than at NAVSEA. It is recommended that NAVSEA personnel meet with shipyard representatives to assess the feasibility of granting local waiver authority.

Preoverhaul Test and Inspection (POT&I). For regular overhauls, a POT&I is conducted 12-18 months before the work commences in order to determine the repair requirements for shipboard equipment and structure. Recently, the Navy extended overhaul cycles for some classes of ships to approximately 70 months between overhauls. This has necessitated the scheduling of two selected restricted availabilities (SRAs) or "mini-overhauls" at approximately the 22-month and 46-month points in this cycle. Since these SRAs are of short-term duration (2 months) and the extended cycle concept is relatively new, the SRA work package for a ship is not clearly defined.

At present, there is no formal requirement for conducting a "mini" POT&I prior to both SRA I and SRA II. Because of operational requirements, it is difficult to schedule fleet time for a shipyard to conduct a POT&I. On the other hand, without a mini POT&I, the shipyard has difficulty in adequately planning for and assessing SRA requirements. It appears that the mini POT&I requirement should be formalized with a view toward minimizing impact on the ship's operational capability while, at the same time, providing the shipyard with the required information.

A similar problem may be emerging for POT&Is conducted prior to regular overhauls. It appears that it is becoming more difficult for the shipyard to conduct the normal POT&I as early as desirable prior to overhaul (i.e., 12-18 months). Also, ships' crews often do not fully support their portion of the POT&I because of limited manpower and heavy operational commitments. NAVSEA should monitor current POT&I schedules to determine if this is a serious problem and if it is significantly affecting overhaul schedules.

Funding for Surface Ships. Unlike submarines, ships are not fully funded for an overhaul. Because of money limitations, the fleet type commander (TYCOM) cannot accomplish all required work through the shipyard. Rather, he must (1) split work between the shipyard and the ship's crew, (2) contract work out if cost effective, and (3) authorize money for some work (e.g., hull repair) in a piecemeal fashion. While the above procedures may appear efficient, they can often create problems that outweigh initial economic gains.

For example, contractors and/or ship's force may fall behind in their respective work, resulting in critical delays in key events (or the shipyard must take over delayed work in a crisis management atmosphere). Also, piecemeal distribution of funds may result in less efficient planning and ordering of parts for certain portions of the overhaul. The core of the problem is, of course, limited monetary resources. However, given the number of problems that are emerging with current procedures, it would seem that some refinements could be made to enable the process to run more smoothly.

Cross-Crafting. There has been a trend in recent years toward increased specialization in shipyards at the worker level. As a result, workers are not proficient at more than one trade. Likewise, local unions support increased specialization because it allows them to maintain their autonomy. While specialization has its merits, the job-shop atmosphere of much shipyard work creates conditions favorable to a more flexible work force. Although hiring and/or training individuals with multiple skills can be accommodated by current classification procedures, management seldom takes advantage of this flexibility. Also, unions must be convinced that increased productivity through cross-crafting ultimately is to their benefit. Shipyards need to consider how and where increased cross-crafting could increase the effectiveness of their work force and develop long-range selection and training policies to ensure effective cross-crafting.

CONCLUSIONS AND GENERAL RECOMMENDATIONS

In the previous section, a number of impediments to productivity within the Navy industrial community were discussed, and, where feasible, recommendations were made for either removing the impediments and/or further determining their sources and impact. In addition to the changes required in these specific areas, results of the study indicate that there is a need to improve upward and lateral communication and to reduce excessive controls. Finally, it is not enough merely to identify impediments and make suggestions for changing them. Personnel within the Navy industrial community need to know that action is being taken and to see visible change.

Improved Communications

The phrase, "lack of communication," has become almost a truism in studies of organizational problems. However, management tends to react to communication problems by increasing downward communication when what may be needed is more and better upward communication. Before management personnel at all levels can adequately understand and respond to problems below them, they need a clear and timely upward flow of information. Similarly, because of the interdependencies within organizational systems, more efficient lateral communication may be required.

In terms of upward communication, many managers at field activities were uncertain as to who was responsible for specific areas of expertise outside of their commands and/or at the SYSCOM level. To address this problem, a quick-reference directory of "who does what" should be created for use by field level managers. Such a directory would not only facilitate the upward flow of information, but also provide more direct and timely input to upper levels of management concerning technical problems at the field activities. Conversely, consideration should be given to using an informal medium (e.g., a SYSCOM newsletter) to provide more timely information from headquarters levels to field managers, including answers to recurring questions from the field.

Increased upward flow of information can also be helpful in identifying productivity problems and solutions. For example, in this study, the response received from field activity personnel at all levels suggests that there is an untapped reservoir of information that could be used to help local organizations undertake productivity improvement efforts. To ensure that this information is received regularly by command management, a formalized structure or mechanism, such as quality control (QC) circles, might be used. A QC circle is composed of a small group of workers from the same work unit who meet to discuss and solve job-related productivity and quality problems. It is certainly not the only approach, but it may serve as an example of one formalized method that increases the upward flow of productivity information.

In all phases of the study, inadequate lateral communication was cited as a significant impediment to coordination and productivity, while effective lateral communication was seen as an important factor in solving or removing many impediments. At the field activities, problems in this area centered on poor communication between line and staff functions (i.e., planning vs. production and production vs. personnel). At the headquarters level, the problem was seen as a lack of communication between different SYSCOMs, which led to inconsistent or conflicting instructions and redundant audits and inspections.

Impediments classified as being under the control of local management often were found to be under the control of more than one department; and those classified as being beyond the control of local management, under the control of more than one SYSCOM.

Thus, solving impediments that were under the control of local management usually required the involvement of a number of departments; solving impediments that were beyond the control of local management, effective communication and coordination across SYSCOMs. There are no easy panaceas for improving lateral communication within or between organizations, but it is clear that new informal and formal methods need to be investigated.

All of the communication issues raised underscore a major point regarding the transmission of information from the field activities to the SYSCOMs and above. At present, it is difficult to "take the pulse" of the Navy's industrial community--in regard to productivity impediments or indeed many other problems--and be assured that the information reaching top level management is free from filtering (i.e., only selective reporting of favorable information). Thus, it appears that various headquarters echelons should develop processes whereby critical information could flow directly to headquarters management while simultaneously providing input to intervening managerial levels. Also, NAVMAT must take a more active role in overseeing the exchange of this information between the various SYSCOMs.

Reduction of Excessive Control

Personnel at all the field activities were concerned about the excessive controls and constraints under which the managers must operate. Indeed, a number of the identified impediments directly related to what were perceived to be counterproductive controls (e.g., limits on buying authority, ceiling restrictions, micromanagement, etc.). The problem with such controls is that there is a separation between field responsibility for undertaking assigned tasks and the authority necessary to successfully complete those tasks. As Boyd (1979, p. 43) notes, "Those who impose the constraints bear no responsibility for the ultimate success or failure of the program. . . a situation which runs directly counter to generally accepted principles of good management." The solution, of course, is not to remove all controls but, rather, to reexamine (1) potential areas where field activities can be given increased authority and flexibility and (2) situations that lead to excessive controls to see if there are alternative solutions.

For example, it was reported that, if one organization finds a loophole to avoid or circumvent existing regulations, the originator of those regulations, in an attempt to prevent possible future abuses, issues new instructions that are so restrictive that all organizations are hindered from accomplishing their mission. It appears that a better solution would be for the originator to only take action against the transgressing organization, while still allowing the other commands the existing flexibility they need to get their mission accomplished.

A related issue concerns the proliferation and duplication of instructions. As noted earlier, the study on institutional barriers in DoD laboratories reported that excessive controls result from the hierarchical levels of staff offices, with each level making the control more restrictive. In this study, it was found that OPM instructions often were successively revised by DoN, SYSCOMs, and the field activities, a practice resulting in excessive and redundant controls. Thus, NAVMAT should identify unnecessary duplication and expansion of instructions, both within and outside of the personnel area.

While this discussion of excessive controls has centered on the relationship between headquarters and field commands, a related problem often occurs within the field activities themselves. First-line supervisors often mentioned that they lacked the authority to accomplish their work because of numerous constraints. One example concerned the incentive awards program. Even though the supervisors were in the best

position to assess the performance of their subordinates, they often had limited authority to give incentive awards. Instead, an incentive awards committee or administrator made the final decision. In this case, the responsibility for effective performance lay with the supervisor while the final authority for rewarding good performance was out of his control. One possible solution would be to give line managers more authority for giving incentive awards while at the same time holding them accountable for any abuses.

It is recognized that originators of various controls may be reluctant to reduce them, for a variety of reasons. Therefore, to reduce such resistance, it is recommended that particular controls be removed from various field activities and the effects noted. If the results are positive, consideration should be given to eliminating the controls from all activities. It is also recommended that the benefits of certain controls be costed out, since, in many cases, their costs may outweigh their benefits.

In sum, excessive controls can be dysfunctional to individual and organizational productivity. At a minimum, such controls can negatively affect work motivation; at a maximum, they can serve as major impediments to productivity. Therefore, NAVMAT and the SYSCOMs should limit excessive micromanagement of their field activities except where controls are essential to increasing or maintaining productivity.

Need for Visible Change

Although both managers and workers at the field activities were very enthusiastic about sharing information on impediments to productivity, their enthusiasm was often tempered by feelings of extreme frustration about being unable to change "the system." Managers often asked, "What makes you think you can change things when we have tried for years and failed?" They mentioned a number of previous studies and audits that had provided good recommendations but never seemed to result in actual changes. As a result, many managers had feelings of apathy or helplessness about being unable to change or improve procedures that they saw as major impediments to productivity.

This report has provided a number of recommendations believed to have potential for removing some of the identified impediments. Systematic actions taken to implement these recommendations, when feasible, should help to convince some managers that change is possible. Indeed, it may encourage them to further address and attempt to correct long standing impediments that were previously seen as impossible to remove.

Most impediments are not isolated problems. In many instances, one impediment generates a number of supplemental problems. For example, personnel ceiling restrictions contribute to a number of other problems, including those that result from the necessity to use outside contractors even when they are not cost effective; the excessive use of temporary employees; and the practice of having employees work outside their position descriptions to fill in for vacant billets. From this example, it can be seen that many impediments may have one major underlying cause. Thus, if this cause cannot be modified, its several manifestations may have to be treated separately even though they are only symptoms. It would be clearly more efficient to attack the cause. Attempts to alleviate problems cannot occur through isolated, independent actions which merely treat symptoms.

Since Navy organizations, including headquarter commands, are all highly interdependent and coordinated systems, changes in one part of the organization often impact on different parts of the organization in unanticipated ways. It is only by considering the impact of changes on the whole system that new and more effective procedures can be developed.

In conclusion, initial attempts to remove impediments and improve the situation should first be directed toward the primary causal factors. If these factors cannot be altered, symptoms may have to be treated. For most of the major impediments identified, there are a variety of contributing causes originating from different levels ranging from the field activities to the central agencies and Congress. Therefore, it is suggested that these impediments be categorized based on whether their major contributing causes lie within the control of NAVMAT or within organizations outside NAVMAT. Those in the former category can be dealt with directly by groups of managers from the appropriate organizational levels within NAVMAT. Those in the latter category must be dealt with using a different strategy, including demonstrating that NAVMAT is actively engaged in eliminating impediments within its control and convincing the levels above or outside NAVMAT that some of their policies are having a negative impact on productivity. A model for such management action could be the DoD Laboratory Management Task Force (July, 1980). It is important that efforts be made to eliminate impediments in both categories, since the opportunity for progress exists in both areas.

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